# The Impact of Bus Reform on Behaviour and Policy: The Case of Malta

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# Declaration

I, Thérèse Bajada confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

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# Abstract

Bus reforms are widely used to increase patronage, improve service quality, and reduce subsidies. Most of the literature on bus reforms focuses on economic factors, but studies of other interventions for behaviour change show that complex interactions between other factors can also be involved. The research presented in this thesis analyses the dynamics between behaviour and policy in a bus reform, using Malta as a case study.

A novel conceptual model that considers the relationship between behaviour and policy is proposed. It draws its inspiration from two models, the Theory of Planned Behaviour (Ajzen, 1991) and the Capability, Opportunity, Motivation and Behaviour Model (Michie et al., 2011). The proposed model combines the behavioural detail of the former with the comprehensiveness of the latter. This model is designed to aid in policy formulation and planning.

Behaviour and its influencing factors were studied through two cross-sectional questionnaires (pre- and post-reform) performed with Maltese residents and tourists. Data were analysed using Multinomial Logistic Regression and Factor Analysis. Semi-structured interviews supplemented the questionnaires, providing a more in-depth insight. Policy implementation was studied using a mixed approach of semi-structured interviews with transport professionals together with an analysis of the relevant policy documents and institutions. Discourse analysis was performed on the transcripts of the interviews. The policy documents and institutions were analysed through policy evaluation criteria, and the Institutional Analytical Development Framework approach.

The findings indicate an overall perception of the failure of the reform, resulting from negative evaluations linked with the unreliability of the bus service. Some of these issues arose because of the institutional structures in place, and policy dependence on short-term government agendas. High expectations combined with initial operational problems led to disappointment and the loss of trust. These findings reinforce the idea that bus reform influences the complex links between behaviour and policy.

## Impact Statement

The impact of this research is beneficial for both academia and the bus industry. The study advances academic literature on bus reform. The proposed conceptual model can be applied by regulators and operators, and can help improve organisational practices targeting the policy and planning of bus reforms. The case study of Malta's bus reform is applied to the conceptual model.

This study shows that complex interactions at various levels are involved in bus reform processes that are not addressed in the literature, including behaviour and policy. Hence, transport planners and policy makers can use it to include behavioural and policy aspects, together with economic approaches when planning reforms. In this manner, reforms would be planned in a more nuanced and all-inclusive way.

Essentially, reforms are interventions for behaviour change, and the proposed conceptual model is developed using behaviour change theory. The conceptual model combines and adapts the Theory of Planned Behaviour (Ajzen 1991), and the Capability, Opportunity, Motivation, and Behaviour Model (Michie et al. 2011). The models complement each other because the former provides a good level of social psychological detail, and the latter is more comprehensive. The conceptual model is formed of two layers, one dedicated to the behavioural aspects, and the other comprising policy, including institutions and bus use.

The advantage of this model is that transport planners, policy-makers, and bus operators can easily transpose it to their cases. It can be applied as part of the evaluation process of bus reforms. Policy makers and planners can apply it at the planning stages while bus operators wishing to provide the service can also use it to assess the behaviour of different population segments. The model can also be used after the reform to monitor behavioural and policy-related performance.

Malta's case includes three contexts. The geographic context provides insight for cases that have physical boundaries, as in islands surrounded by the sea, or cities located in remote areas or in mountain regions. Malta's case was implemented at a national level, so lessons can be learned at that scale as well. The socio-economic context provides insight into cases where there are high population densities with car dependent societies, and with low but growing GDPs that depend largely on the tourism industry. The

cultural context provides insight into societies where, apart from being car dependent, peer-pressure plays a significant role in car ownership and use. Concurrently, tourists depend on the bus; hence, the bus service has to cater for tourists and the few commuters that do not use a car. Organisational culture also plays a role. Foreign top management might not be welcomed, and this behaviour within the operator develops into operational problems. Malta's case shows that the level of detail portrayed from these contexts is important for the success of a bus reform.

Bus service customers can benefit from this research. The advantage derived from this work is the human-centric approach dedicated to the planning of a reform in the bus service.

# Acknowledgements

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# List of Publications

During the course of this research, the following articles were peer reviewed and published

Bajada, T., 2015. "The Malta Bus Service Reform: Implications for policy from a 'natural experiment' of attitudes towards bus service quality, and modal shift." in *Sustainable Urban Transport*, ed. Attard, M., & Shiftan, Y. Emerald Insight, pp.93–119. Available at: http://dx.doi.org/10.1108/S2044-994120150000007016.

Bajada, T. & Titheridge, H., 2016. To contract or to operate publicly ? Observations from the bus service reform transition process in Malta. *Research in Transportation Economics*, 59, pp.281–291.

Bajada, T. & Titheridge, H., 2017. The attitudes of tourists towards a bus service: implications for policy from a Maltese case study. *Transportation Research Procedia*, 25C, pp.4114–4133. Available at: http://dx.doi.org/10.1016/j.trpro.2017.05.342.

# List of Abbreviations

**C**

*COM-B*

Capability Opportunity Motivation and Behaviour Model

**E**

*ERA*

Environmental Resources Authority (demerged from MEPA)

*EU*

European Union

**F**

*FA*

Factor Analysis

**G**

*GDP*

Gross Domestic Product

**M**

*MEPA*

Malta Environment and Planning Authority (Refer to ERA and PA)

*MIA*

Malta International Airport

*MITC*

Ministry of Infrastructure Transport and Communications

*MNL*

Multinomial Logistic Regression

**P**

*PA*

Planning Authority (demerged from MEPA)

*PAS*

Public Attitudes Survey

*PTA*

Public Transport Association

**T**

*TEN-T*

Trans-European Networks for Transport

*TM*

Transport Malta

*TPB*

Theory of Planned Behaviour

# Glossary

**A**

*Actors*

Stakeholders that interact and function as a corporate actor

*Action arena*

Is a complex unit shaped by the variables ‘action situation’ and ‘actors’, and where these same variables interact

*Action situation*

Include a structure described by several variables. Such variables include the position of stakeholders within institutions. Another variable is stakeholder’s allowable actions, and their linkage to outcomes, and the linked sequences of actions. The level of control that each participant has over choice is another variable. The information available to participants about the structure of the action situation. The costs and benefits which serve as incentives and deterrents, assigned to actions and outcomes

*Agency*

State and para-statal institutions whose role is to provide masterplans, strategy documents, as well as policy documents. These agencies include regulators

*Attitudes towards bus use*

Evaluations of bus service quality that are influenced by prior knowledge and/or experiences

**B**

*Behaviour*

The factors in the conceptual model that might influence bus use, attitudes, social norms, perceived confidence, intention, capability, and opportunity

**C**

*Capability of using the bus*

The physical and mental ability of using the bus

*Components*

A mixture of factors and variables (refer to Factors and Variables)

*COM-B model*

Capability Opportunity Motivation and Behaviour Model. A framework for understanding behaviour, and is the core component of the behaviour change wheel developed by (Michie et al. 2011). Refer to Chapter 2, section 2.11.2.

*Culture*

The behaviours and beliefs characteristic of a particular society, ethnic, or age group

**D**

*Don't know*

Description of category '6' for the questionnaire ratings. This means that participants did not have an opinion about the bus service, hence it is described as 'don't know'

**E**

*Eight pre-defined service quality characteristics*

The chosen pre-selected bus service quality characteristics used in the questionnaires – accessibility, information, time, fare, customer care, comfort, security, and impact on the environment

*Expectations*

Customers' perceptions of a service together with their assumption of its delivery, as well as their individual standards and experience

**F**

*Factors*

The aspects that compose the inner layer of the proposed conceptual model that is, attitude, perceived confidence, social norm, intention, capability, opportunity

**I**

*Institutions*

Government ministries, government departments, and agencies, which are formed by rules and social norms

*Intention to use the bus*

The willingness and motivation to perform direct behaviour, and the considerations involved to perform a behaviour

**M**

*Maltese residents*

Persons who live permanently, or on a long-term basis in Malta

*Mode use*

Mode use is used interchangeably with frequent mode used. The transport vehicle used most frequently by the questionnaire participants.

**O**

*Opportunity to use the bus*

The physical and social aspects that make the behaviour possible

**P**

*Perceived confidence in using the bus*

The ability to use the bus and/or the ability to intend to use the bus based on evaluations of the bus service

**R**

*Reform*

Also referred to as bus reform and bus service reform, are interventions for behaviour change characterised by operational and regulatory changes that can take place radically or incrementally

*Rules*

Shared understandings amongst stakeholders that enforce actions that are required, prohibited, or permitted

**S**

*Social norms*

Individuals identify themselves with specific groups (e.g., bus users), and they consider what is typically done by these groups, and based on normal practice individuals perform their behaviour according to what one ought to do

**T**

*Tourists*

Tourists vary by type; they can be domestic (includes visitors resident within the country of where the activity takes place), or international (people taking part in activities outside their country of residence). In this research tourists are international tourists.

*TPB*

Theory of Planned Behaviour is a commonly used socio-psychological model developed by Ajzen (1991). Considers intention as the prerequisite to perform a behaviour. Refer to Chapter 2, section 2.11.1.

*Transport professionals*

Stakeholders who were involved in the reform process, before, during and immediately after the reform

**U**

*Unsure*

Description of category ‘3’ for the questionnaire ratings. This means that participants thought that the bus service was neither better nor worse, their opinion was neutral

**V**

*Values*

Principles or standards of behaviour; one’s judgement of what is important in life

*Variables*

The values that contribute to the factors of the proposed conceptual model, for example age, gender, and service quality

# Chapter 1 Introduction

The positive thing about buses is their ability to carry multiple passengers in a single trip. Furthermore, buses require less infrastructure compared to other modes of public transport that carry high patronage numbers, such as trains or trams. With buses, it is possible to access most locations, and this liberty of movement makes buses "the most ubiquitous mode" (Balcombe et al. 2004, p. 5). These are only a few of the multiple advantages of buses.

Transport policy makers and planners use buses as policy tools, particularly to decrease car use. In cases where multiple aspects of the bus service need improvement, a bus service reform is introduced (e.g., Wallis & Bray 2001, Pucher et al. 2005). Bus reform can have both positive and negative impacts, and the degree to which such impacts affect stakeholders determines the perception of success or failure of the reform.

Using buses as policy tools, however, is not as straightforward as it might seem. Some examples of the problems encountered with bus services include competition on the road with other vehicles (Barter 2008), operational and market structural issues (Banister et al. 1992), and poor service quality (Guirao et al. 2016). When the targets for improvement are multiple, complexity in the reform process increases, which influences the outcome of the change. Indeed, complex factors can have an immediate effect and sustained long-term improvements.

## 1.1 Research Problem

Bus reforms are complex interventions that seek to increase bus patronage (e.g., Parker 2011), by influencing behaviour (Hensher & Stanley 2010) and policy. To the author's knowledge, no particular study has looked at the combined behavioural and policy dynamics of bus reform.

The transport literature focuses on bus services and their reform mostly from business and economic perspectives. Reference is made to changes in organisation, market structures, and contractual agreements (Hensher et al. 2003, Longva & Osland 2010, Sakai & Takahashi 2013). Other research refers to the influence of policy on bus reform (Stone 2009), the provision of service quality from stated preferences (Hensher et al. 2003), and reforming a bus service based on passenger satisfaction (Andaleeb et al. 2007).

By exploring the combined behavioural and policy dynamics, this research shall explore these complex synergies as part of a reform process. The case study is the Malta bus reform of the 3rd July 2011.

## 1.2 Assumption and Aim

The overall assumption for this research derives from the problem explained in section 1.1: a bus service reform is complex. This research assumes that changes to contractual obligations to improve service quality, focusing on customer satisfaction or on the role of institutions and policy-making, address only parts of the problem. When policy makers and planners consider the implementation of bus reform or when operators decide to participate in a bus reform process, they should consider the combined impacts of the reform on behaviour and policy.

This research aims to unravel the complexity of a bus reform by combining patronage numbers and evaluations of service quality. Additionally, this research reveals more on the relationships between particular aspects. These aspects are behavioural factors, including social norms, perceived confidence, capability, intention, opportunity, the bus policy used to implement the bus reform, and the role of institutional structures involved in establishing the bus reform.

By being aware of the effects on the relationships between behaviour and policy produced by the reform, policy-makers, planners, and operators can make informed decisions on reform planning and implementation. Understanding complexities helps improve further the decision process, implementation, and performance evaluation of bus reforms.

This research combines and adapts two behavioural change models, namely, the Theory of Planned Behaviour (TPB) (Ajzen 1991) and the Capability, Opportunity, Motivation and Behaviour (COM-B) model (Michie et al. 2011), into a proposed conceptual model that has two tiers. The inner tier includes the interactions between the behavioural change factors while the outer tier includes policy that links the intervention for behaviour change - the reform and bus use.

This research offers a novel insight into the synergies involved in a bus reform that are influenced by behavioural factors and policy. Through the proposed conceptual model, bus reform is explored from a socio-psychological level in a detailed and comprehensive manner. Additionally, relevant policies and institutional structures are thoroughly analysed.

## 1.3 Research Questions

Five research questions were formulated. These research questions reflect the different parts of the proposed conceptual model, by doing so they reveal the complex interactions of bus reform that are related to behaviour and policy. The research questions are listed below:

i. How did attitudes, perceived confidence, capability, and opportunity influence the intention to use the bus before and after the reform?

ii. How did the bus reform change attitudes and perceived confidence regarding using the bus?

iii. How did the bus reform influence capability and opportunity to use the bus, and thus, bus use?

iv. After the reform, what were the effects (of social norms) on attitudes, perceived confidence, and intention to use the bus?

v. To what extent did institutional structures and relevant policy influence the bus service reform as a policy tool, and how did transport professionals evaluate the bus service reform?

Each research question is linked to parts of the proposed conceptual model, which is discussed in detail in Chapter 3. The objectives on each research question are discussed in Chapter 5, the Research Methodology.

## 1.4 Research Context

The Malta bus reform occurred at an opportune time to apply the proposed conceptual model. The policy intervention was implemented overnight, using an approach known as 'big bang'. Consequently, on the 2nd of July 2011, the operator was the Public Transport Association (PTA), but the day after, the new operator was Arriva Malta Consortium. Eventually, due to combined persistent issues in December 2013, the operator opted out of a ten-year contract.

This situation led to the case study of Malta being explored from a natural experiment approach. A natural experiment is an observational study, where the researcher does not have control over the changes that occur (Messer 2016). Instead, the researcher has to adapt the research as the changes progress, which is the method followed in this study.

Malta has a car-oriented society (Malta Environment and Planning Authority 2003), and the main mode of public transport is the bus. For over forty years, the bus service was operated under a liberalised market composed of 400 bus owners-drivers, who together formed the PTA. In effect, the bus service was a monopoly.

The main characteristics of the PTA service were that bus drivers were known for their lack of customer care and resistance to change, and the buses were mainly an old fleet that was maintained by its owners and that did not comply with European Union (EU) regulations on emissions (Ministry of Infrastructure Transport and Communications 2008). Malta has been an EU member since 2004.

The service operated according to a schedule that was set by the regulator, Transport Malta (TM), in agreement with the PTA. Frequencies generally varied between half an hour and an hour.

The regulator and the operator agreed on the routes, and the network operated on a hub-and-spoke system, with the capital city, Valletta, acting as the main bus terminus. The routes radiated outwards to the settlements around Malta (Childs & Sutton 2008).

The state of the bus service, coupled with a car-oriented culture, led to instability in bus patronage and a steady increase in car use. Figure 1.1 shows this trend until December 2010, seven months before the reform started.

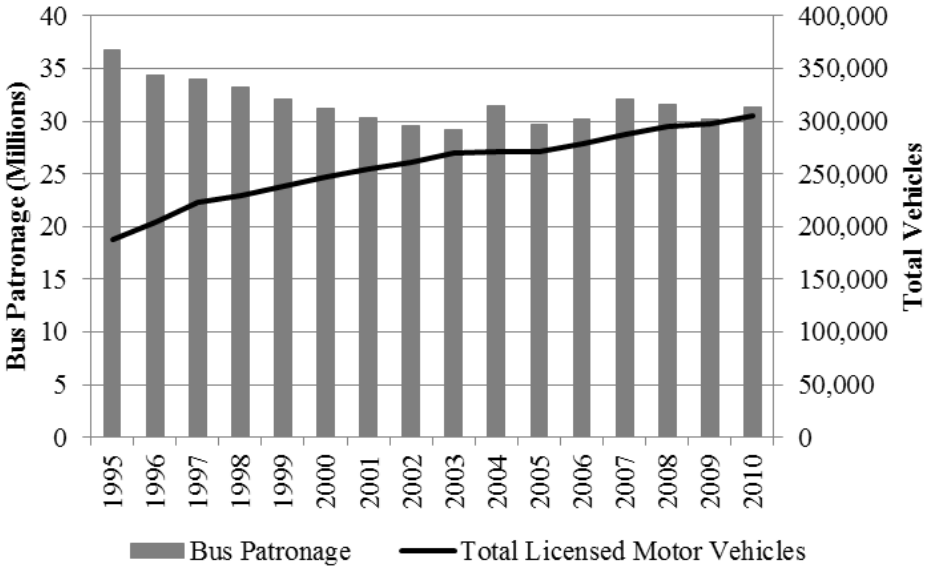


Figure 1.1 Bus patronage and total licensed motor vehicles between 1995 and 2010

When visiting Malta, 86% of tourists use the bus (Ministry for Tourism 1999). They do this mainly because there are few alternatives, but also because it is a cheap service (Attard 2005). Additionally, in Malta, driving takes place on the left-hand side of the road, which is an uncommon practice for most of the European countries from where tourists visiting Malta hail (Black 1996); this practice, in addition to the high percentage of tourists who use the bus, leads to the assumption that tourists are discouraged from hiring a car.

## 1.5 The Malta Bus Reform – A Brief Overview

In 2008, the government launched the public transport White Paper (Ministry of Infrastructure Transport and Communications 2008). The main aim of this White Paper was to achieve a modal shift from car use to bus use. The White Paper listed seven objectives that were expected to be met through the bus service reform. These were (i)

improve network planning, (ii) change the bus fleet to comply with EU emission standards, (iii) remove the exclusivity of rights to operate, (iv) apply a roster system following EU regulations, (v) provide an efficient government subsidy, (vi) provide information to customers, and (vii) increase and enforce regulation (MITC 2008).

After publishing the White Paper in 2008, the government touted widely the high-level specifications of how the new bus service would operate. This approach to information dissemination raised public expectations (Attard 2012).

A competitive tendering approach was selected as the contracting model for the procurement of the bus service. Eventually, Arriva Malta Consortium won the bid. However, Arriva Malta failed to comply with the contractual agreement on several different levels, which are explored in Chapter 5.

In a period of two and a half years, the company accrued over €70 million in debts (Dalli 2014). Arriva plc is a subsidiary company of the Deutsche Bahn, which stopped helping the Malta-based operator, meaning that the latter would quickly go bankrupt (Holley 2016). Eventually, the failure of the bus service reform contributed partly to the government losing the election in 2013. To avoid liquidation, the newly elected government intervened and bought the bus company at a nominal value of €1 (Dalli 2014).

In January 2014, the government became the operator of the bus service. Nationalisation meant that the government would be both the operator and the regulator of the bus service. However, this situation was temporary. The new bus company became Malta Public Transport. During this time, in January 2014, the government invited an expression of interest "for the provision of scheduled bus services in Malta and Gozo" (Transport Malta 2014). Having given the lowest financial offer, ALESA was the preferred option (Micallef 2014, Mizzi 2014). The government negotiated the service with the Spanish operator behind closed doors. Eventually, on the 8th January 2015, ALESA took over the bus service, though the new bus company maintained the name Malta Public Transport (Sansone 2014).

The case study used in this dissertation focuses mainly on the service provided by the Arriva Malta Consortium, and to a limited extent, on the immediate repercussions after the company left the island, giving rise to the nationalised service.

## 1.6 Research Contributions

This research provides novel perspectives on the complex interactions of behavioural factors and policy linked to a bus reform. This work also presents novel ideas in the areas of data analysis.

- Through the proposed conceptual model, this study provides the opportunity to demonstrate the complexities within a bus reform, which apart from influencing patronage, also affect behavioural change factors. The proposed model includes an adaptation of the COM-B (Capability Opportunity Motivation – Behaviour) model (Michie et al. 2011), which is combined with an adaptation of the TPB (Theory of Planned Behaviour) (Ajzen 1991). This combination and adaptation of these two models is a first for bus reform research. The importance of this contribution lies in the fact that the proposed model can be applied to the evaluation processes of bus reforms. Thus, if this model were applied to other reforms, the bus reform process would be evaluated through the behavioural factors within population segments and through policy development.

- The natural experiment approach provides the opportunity to apply the proposed conceptual model to the case of Malta. The implementation of this bus reform was on a national scale, serving as a spatial laboratory for the conceptual model. Spatial laboratories can be used for more complex systems in larger countries, as well as in similar environments (King 1993, Enoch & Warren 2008). The proposed model can be used in environments similar to Malta, for instance, island states that are dependent on tourism, or in cases where there is evident rivalry between car use and bus use. The proposed model is also scalable to larger countries.

- Semi-structured interviews are analysed using discourse analysis. This method of analysis has been sparsely used in transport policy. The discourse analysis in

this research applies a philosophical approach, that is, the Foucauldian approach, combined with Laclau and Mouffe's Discourse Theory and Fairclough's Critical Discourse Analysis (Jorgensen & Phillips 2002).

- The Institutional Analytical Development Framework Approach combined with stages of project development is used to analyse the institutions responsible for bus policy design and implementation. It provides a different perspective to the analysis of such institutions. This method of analysis is new for bus policy. Indeed, in transport policy, it has been used only once, that is, to analyse the institutions responsible for waterway systems (Hijdra et al. 2015).

## 1.7 Dissertation Structure

This thesis, which portrays the natural experiment, and its outcomes (Figure 1.2), is divided into three parts: Part 1 - Research Context, part 2 – Natural Experiment, and part 3 – Research Outcomes. The chapters in part 3 are linked to the relevant parts of the conceptual model.

*Part 1 – Research Context*

*Chapter 2 Literature Review*

This chapter highlights examples of bus reforms worldwide. It then discusses transport policy and the role of institutions in influencing market structures and bus service operations. The discussion proceeds to consider the role of bus service quality, the use of benchmarking as a method of assuring the minimum level of service required for bus service operations, and the factors that influence bus use, and it refers briefly to behaviour change theory. The chapter concludes by identifying the gaps in the literature that are addressed in this research.

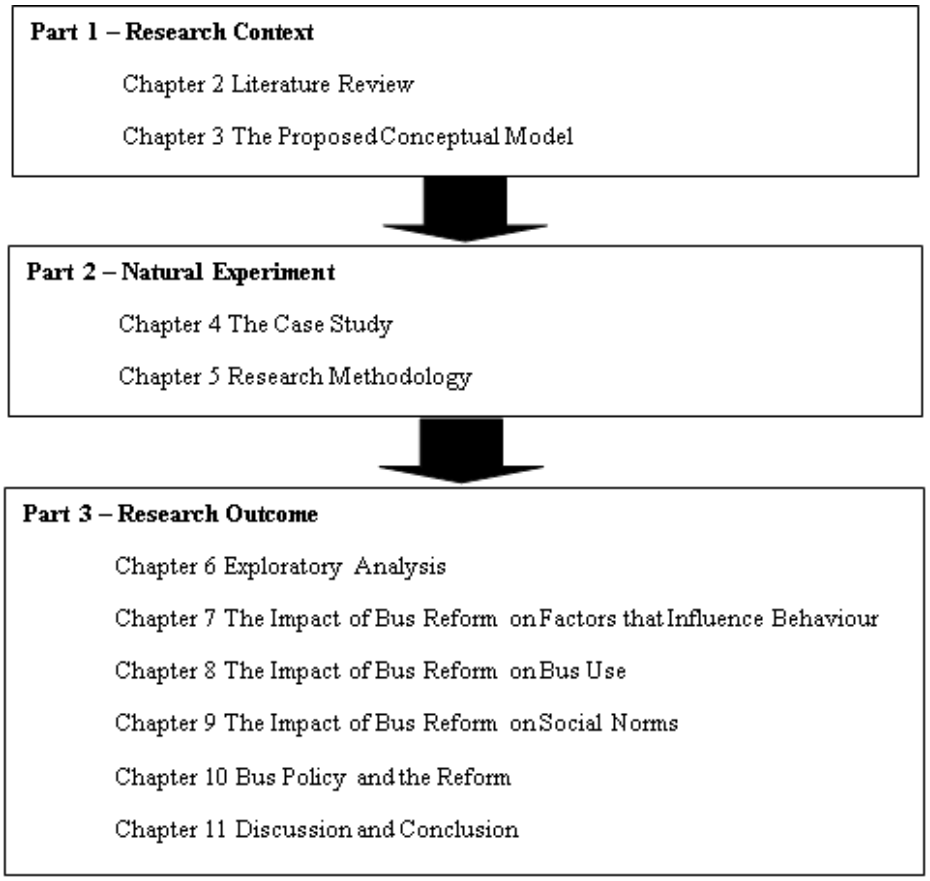


Figure 1.2 Thesis Outline

*Chapter 3 The Proposed Conceptual Model*

This chapter is a continuation of Chapter 2, but focuses specifically on the two behavioural change models used to create the proposed conceptual model. It discusses the necessity of combining and adapting the two models.

*Part 2 – Natural Experiment*

*Chapter 4 The Case Study*

This chapter presents the case study in its geographical, cultural, and socio-economic context. Here, the bus reform is explained in detail.

*Chapter 5 Research Methodology*

This chapter discusses the research methodology used for conducting the natural experiment. It identifies the different research methods selected for the different parts of the conceptual model while addressing each research question with regard to the relevant objectives and methods of analysis.

*Part 3 – Research Outcomes*

*Chapter 6 Exploratory Analysis*

The exploratory analysis gives an indicative outlook of the research findings. Through data, it provides background information about the reform and its impacts, both on behavioural change factors, as well as on bus use.

*Chapter 7 The Impact of Bus Reform on Factors that Influence Behaviour*

This and the following three chapters target relevant parts of the conceptual model. The impact of the bus reform on behaviour unravels the varying behavioural factors that influence the different population samples of this research to use the bus.

*Chapter 8 The Impact of Bus Reform on Bus Use*

Once the significant behavioural factors have been highlighted in the previous chapter, this chapter proceeds to show the actual patterns of mode use before and after the reform. This chapter reveals the different population segments and their patterns of mode use, according to the study's population samples.

*Chapter 9 The Impact of Bus Reform on Social Norms*

Through discourse analysis, it is possible to explore the effects of bus reform on the population samples' expectations and norms. It becomes evident here that norms and expectations before the reform had an impact on the reform itself.

*Chapter 10 Bus Policy and the Reform*

This chapter analyses the institutions that contributed to the bus reform. It then proceeds to analyse the relevant bus policy documents, and concludes with a discourse analysis of the transport professionals' semi-structured interviews.

*Chapter 11 Discussion and Conclusion*

The concluding chapter highlights the main research findings and discusses the conceptual model. The concluding part outlines the contributions of this dissertation, which is followed by suggestions for further research.

# Part 1 Research Context

# Chapter 2 Literature Review

This chapter presents a review of bus reforms, bus policy and institutions, and behaviour change theory regarding bus use. The links and gaps between the three aspects are highlighted.

## 2.1 The Complexity of Bus Reforms

Bus service reforms are implemented to improve the situation of an existing bus service. This seemingly simple aim involves several complex interactions, and the outcome is not always straightforward. Complexity derives from the interactions involved in the reform process, which involves policy, relationships between the regulator and the operator, market structures, customers, and potential customers.

Generally, improvement focuses on two main sectors, namely, operational and regulatory (Gómez-Ibáñez & Meyer 1997). For operational and regulatory changes to take place, both relevant policy and institutional structures have to change (Gibson 2010). Some studies have highlighted the association between operations, regulation, policy, and institutional structures (e.g., van de Velde 2003, Hensher 2003, Gwilliam 2008b and Albalate & Bel 2010) while other studies have included service quality and behaviour towards bus use (e.g., Friman 2004, dell'Olio et al. 2010, dell'Olio et al. 2011 and Ibeas et al. 2011).

There is a lack of literature, however, regarding the association between the administrative and operational aspects, and customers' and potential customers' behaviour. This study seeks to reveal the complexity involved in combining the two areas, while showing that it is important to both consider and understand their interactions.

## 2.2 Implementing Bus Reform

The implementation of bus reform varies between stepped approaches, e.g., Curitiba (Brazil) (Lindau et al. 2010) and TransMilenio (Bogotá, Colombia) (Gilbert 2008) and

radical or ‘big bang’ approaches, e.g., Seoul, South Korea (Kim et al. 2011) and Transantiago, Chile (Muñoz et al. 2008).

Radical reforms are beneficial when, for instance, the bus companies fall into bankruptcy, leading to deteriorating situations, as was the case in Seoul. The radical changes involved can be attributed to all the changes involved in the operations, as was the case of Transantiago, and Adelaide, Australia (Bray & Wallis 2008).

Radical changes can also be attributed to parts of the bus service that need improvement, such as fares and routes, as happened in Birmingham, Manchester, and Liverpool in October 1986. These were some of the areas, outside London, across Britain that were deregulated. In these cases, following the privatisation and deregulation of the local bus services, private bus operators were free to change fares and design the routes they wished to serve, as long as there were basic safety standards for vehicles and drivers (Gómez-Ibáñez & Meyer 1997).

Conversely, incremental changes follow medium-term priority actions that enhance the public transport system. These medium-term priority actions are established after the stabilisation and improvement of service levels following short-term policies. Similar changes have been implemented in Cape Town, South Africa (Clark & Crous 2002).

Both approaches to reform implementation have their associated problems. The radical or “big bang” approach aims to improve issues, such as bus driver behaviour and traffic safety, overnight (Estache & Gómez-Lobo 2005). In cases where these improvements do not have the planned effect, such as happened in Transantiago, the repercussions are drastic and painful (Gómez-lobo 2012).

The incremental approach may be the result of a series of small changes over a long period of time, for instance, involving route re-design (Ceder & Wilson 1986). In the Netherlands, incremental changes led to a continual increase in bus subsidies, acting as a burden on government (Bly & Oldfield 1987, Leisink 2003). These small incremental steps might not lead to one large comprehensive outcome (Johnson & Harrigan 1978).

Although both approaches have associated problems, the incremental approach has more advantages than the radical approach. The incremental approach allows for more

time to design, test, and restructure, whereas the radical approach requires drastic, short-term changes (Alexandersson et al. 1998).

## 2.3 Bus Reforms as Unique Policy Tools

Bus reforms are unique. Each case develops according to its context - geographical, cultural, and socio-economic. Nevertheless, every situation provides lessons from which to learn (Preston, 1999). Indeed, lessons learnt can derive from the successes as well as the failures of bus reforms.

Consistent with most of the successful bus reforms lies political will (Pienaar et al. 2005, Valderrama & Beltran 2007, Cheong & Loh 2015), cost reductions (Ashmore & Mellor 2010, Ida & Talit 2015), patronage increase (Lyons et al. 2008), and improvements in service quality (Muñoz & Gschwender 2008, Ida & Talit 2015). Other indirect successes are also achieved, such as reduced air pollution and a reduction in crime (Hidalgo et al. 2013).

Table 2.1 summarises, in chronological order, some of the bus reforms that have been implemented in different countries. The summary includes the location where the bus reforms were implemented; the type of reform, that is, whether it was radical or implemented in steps; the reported successes and failures, and lessons learnt.

As seen from Table 2.1, bus reforms take place in different times depending on the mobility and planning context of the countries or cities, and the political situations that influence them. In most of the cases, such as Singapore, Cape Town, and Seoul, the cities suffered from a loss of bus patronage, an increase in car use, and a lack of any political or institutional vision to improve the bus service.

In Cape Town, apartheid left a negative mark on the bus service. People using the service were stigmatised as low-income, captive bus users. The result was a constant 20-year bus patronage decline, and poor bus service quality exacerbated the situation (Clark & Crous 2002). Similar problems, which generally included increased car use, related traffic congestion, and reduced bus patronage, together with a declining bus service quality were visible in Seoul (Allen 2013); Bogotá (Gilbert 2008); and Santiago (Muñoz & Gschwender 2008).

Although, at times, successes (e.g., Lindau et al. 2010) and failures (e.g., Muñoz & Gschwender 2008) are clearly stated and, therefore, easy to identify, reforms go through processes that involve both failures and successes (e.g., Muñoz et al. 2008). The case of Transantiago (Santiago, Chile) is a clear example of a radical reform that was labelled as a failure, but that improved gradually (Muñoz et al. 2008 and Muñoz et al. 2013).

The initial failure of Transantiago was the actual implementation of the reform, including the delay in installing GPS devices on the fleet, which could help track the vehicles; conversely, a rapid benefit was the reduction in the number of bus operators, which led to more regulating control (Muñoz et al. 2008).

Identifying reform successes and failures can prove difficult when it comes to selecting lessons from which to learn. Hence, it is necessary to define the terms 'success' and 'failure'.

The definition of 'success' is "the accomplishment of an aim" (Oxford University Press 2017a), while the opposite is 'failure', which is defined as a "lack of success" (Oxford University Press 2017b). These definitions are clear; they indicate either an accomplishment or otherwise. Hence, if these definitions were applied to a reform, they should be related to the aims of the reform. For instance, if the main aim of a reform is to obtain patronage increase, and this does not occur, then the reform is a failure.

Table 2.1 A Summary of some of the Bus Service Reforms

| Description | Details |
|---|---|
| *Location of Bus Reform* | **Singapore, 1973** |
| *Type of Reform* | • Slow changes following the white paper on "Reorganisation of the Motor Transport Service of Singapore".<br>• Awarding of contracts, competition for the market. In May 2014, moved from a competitive tendering approach to a government contracting model – a bus infrastructure that is government owned but operators are selected through competitive tendering |
| *Reported Success* | • Political will and a unified fare structure;<br>• In 2009, the Land Transport Authority was in charge of bus planning |
| *Reported Failure/Issues* | • Despite continual improvement in the bus service quality, buses experience crowding;<br>• Service quality problems, such as bus bunching, still exist |
| *Lessons Learnt* | Nationalisation does not work. Contracting promotes greater competition |
| *Location of Bus Reform* | **Curitiba (Brazil), 1974** |
| *Type of Reform* | • Slow introduction, fully private, unsubsidised operations;<br>• 10-year contracts based on performance, and operations are done by area |
| *Reported Success* | • High quality, cost effective,<br>• Strong political will,<br>• Effective institutional system,<br>• Close relationship between short/medium term and operational public |

| | |
|---|---|
| | transport planning,<br>• Fixed fare allowing transfers between services, cross-subsidisation,<br>• Government provides infrastructure,<br>• The operational part is financially independent |
| *Reported Failure/Issues* | • Service level, e.g., noise, comfort, operational issues, information |
| *Lessons Learnt* | • First case of BRT in the world.<br>• Used as an example for other cities to apply BRT (Bus Rapid Transit) systems,<br>• Establish a close relationship between the public transport system, the land use legislation and the hierarchy of the urban road network,<br>• Priority should be given to public transport,<br>• Provide information to the inhabitants as much as possible,<br>• Good quality, formal public transport system,<br>• Working together with a regulatory culture and<br>• A strong enforcement system,<br>• Political will is key |
| *Location of Bus Reform* | **London Buses (England), 1986** |
| *Type of Reform* | • Competitive Tendering for bus routes |
| *Reported Success* | • Improved service quality,<br>• Bus priority,<br>• Travel card and passenger concessionary passes improved transfer between public transport modes,<br>• All night bus travel |
| *Reported Failure/Issues* | • The need for flexibility for operators in contracts structures, reduces the bus industry to the role of a service contractor, and<br>• Requires a high level of support due to organisation and regulation |
| *Lessons Learnt* | • Travel cards are successful market devices and ease operations, in terms of speeding up boarding |
| *Location of Bus Reform* | **New Zealand, 1991** |
| *Type of Reform* | • Total market deregulation,<br>• Big bang approach,<br>• Subsidised services - Competitive tendering for the market, with net-cost contracts, on bus routes<br>• Non-subsidised services – deregulation, through competition in the market through competitive tendering |
| *Reported Success* | • Cost reductions |
| *Reported Failure/Issues* | • Staff reductions,<br>• Sacrifice market contestability (freedom of entry & exit),<br>• Restricted access to patronage data |
| *Lessons Learnt* | • Institutional reform is necessary before regulatory reform,<br>• Minimise dominance of any one operator in an area,<br>• Reduce barriers to entry,<br>• Provide a range of contract sizes,<br>• Provide suitable contract durations,<br>• Moving towards a fully contracted model of competitive tendering for the market |
| *Location of Bus Reform* | **Cape Town (South Africa), 1994** |
| *Type of Reform* | • Competitive tendering with negotiated contracts |
| *Reported Success* | • Inclusion of Integrated Transport Plans (ITPs) – composed of all modes of transport e.g., rail, bus and taxi,<br>• More investment in BRT |
| *Reported Failure/Issues* | • Once contracts expire, operators are operating on short term contracts, from month to month,<br>• Very slow progress |
| *Lessons Learnt* | • Lack of effective policy implementation hinders the strategy process, |

| | |
|---|---|
| | • Complex political relationships cause problems for projects to proceed,<br>• Lack of skills hinder effective project implementation, and monitoring of policy initiatives |
| *Location of Bus Reform* | **Adelaide (Australia), 1995** |
| *Type of Reform* | • Competitive tendering, area contracts, slow introduction.<br>• Later in 1999-2000 a second round of competitive tenders was implemented in a 'big bang' approach |
| *Reported Success* | • Initial decline in revenue but after 2001 there was a strong increase in revenue,<br>• Patronage increase,<br>• Improved service quality e.g., reliability,<br>• Increase in bus services,<br>• Decline in operating costs |
| *Reported Failure/Issues* | • Strict regulation by the Passenger Transport Board (PTB).<br>• Restricted encouragement of innovation and service enhancement,<br>• Incentives and payments are still required.<br>• Cost efficiency and quality enhancement are still an issue |
| *Lessons Learnt* | • Improve services to meet market needs and encourage patronage growth,<br>• Competitive tendering reduce costs, including both labour and non-labour costs,<br>• Well-structured contracts help reduce costs including set times e.g., 5+5 years,<br>• Having a payment structure,<br>• The ability for operators to initiate proposals for service changes that allow costs to be reduced and provide more services.<br>• Three tendering rounds were necessary to achieve a successful situation of reduced costs,<br>• Patronage growth and good service quality.<br>• Possibly, Negotiated Performance-based Contracts (NPBCs) are the way forward |
| *Location of Bus Reform* | **Israel, 2000** |
| *Type of Reform* | • Competitive tendering for bus routes |
| *Reported Success* | • Cost reduction and reduced subsidies,<br>• Rise in level of service |
| *Reported Failure/Issues* | • Frequent changes in the structure of tenders and their characteristics make it difficult to implement competition,<br>• Bus drivers suffered from wage reductions,<br>• There are poor bus driver skills |
| *Lessons Learnt* | • Include a minimum wage for bus drivers<br>• Include driver training in the competition stage of the tender,<br>• Centralisation of authority at national level may deter regulation and deter the adaptation of levels of service to people in need,<br>• Regulators may lack operational knowledge that is only available on the field |
| *Location of Bus Reform* | **TransMilenio (Bogotá, Colombia), 2000** |
| *Type of Reform* | • Introduced in phases,<br>• Competitive Tendering on several parts of the project e.g., trunk and feeder services,<br>• Collection system, and<br>• Advertising |
| *Reported Success* | • Considered a sustainable transport best practice,<br>• High quality, bus priority, service level,<br>• Reduced road accidents,<br>• Reduced operating costs,<br>• Reduced air pollution,<br>• Decline in crime and increase in land values, |

| | |
|---|---|
| | • Strong political will |
| *Reported Failure/Issues* | • Problems with route construction on traffic lanes,<br>• Need for service level improvements |
| *Lessons Learnt* | • Used as an example for other cities to apply BRT (Bus Rapid Transit) systems,<br>• Political will is key |
| *Location of Bus Reform* | **Seoul (Republic of Korea), 2004** |
| *Type of Reform* | • Started with a radical change and continued with a stepped approach – timed-changes, e.g., to the expansion of the BRT network,<br>• Semi-public operation system, where bus firms are private, but routes, schedule and fare decisions are the responsibility of the Seoul Metropolitan Government,<br>• Includes a system of contracts and Public Private Partnerships (PPP) |
| *Reported Success* | • Increased regulation,<br>• Reorganised the bus system, including BRT routes,<br>• Better coordination,<br>• Decreased accidents,<br>• Decrease in air pollution |
| *Reported Failure/Issues* | • Initial customer dissatisfaction with service level, but eventual improvement with increase in BRT corridors and bus speeds,<br>• Subsidy related issues |
| *Lessons Learnt* | • A trial period to test new technologies was necessary,<br>• More time was necessary to disseminate the necessary information,<br>• Political will is key,<br>• Seoul city authority played a leading role in the transport reform process |
| *Location of Bus Reform* | **Melbourne (Australia), 2002** |
| *Type of Reform* | • Negotiated performance-based contracts,<br>• Bus services planned at the tactical level |
| *Reported Success* | • Bus patronage increase,<br>• Trusting relationship between operator and regulator,<br>• Service improved |
| *Reported Failure/Issues* | • Risk in costs – government would need to cover for costs, and operators would be exposed to cost risks,<br>• Low wages for employees with the bus company |
| *Lessons Learnt* | • Competitive tendering is not necessarily the most appropriate method of procurement |
| *Location of Bus Reform* | **Transantiago (Santiago, Chile), 2007** |
| *Type of Reform* | • Radical with Competitive Tendering |
| *Reported Success* | • Formalised bus industry,<br>• Service level,<br>• Bus priority,<br>• Reduced road traffic accidents,<br>• Introduced subsidies |
| *Reported Failure/Issues* | • Political,<br>• Operational,<br>• Media,<br>• Service level |
| *Lessons Learnt* | • Design,<br>• Implementation,<br>• Operation,<br>• Political will are key |

Reforms, however, are not a clear-cut black and white situation; they are a policy intervention that influences several criteria (policy, regulation, operations, service quality, and behaviour) in the process. How reform influences these criteria is also part of the success/failure balance. Nevertheless, a policy that produces more negative outcomes than positive ones is, in general, a poor policy (White 1997), and the reverse happens in the case of good policy.

For instance, the case of the Latin American busways or bus rapid transit, to provide designated corridors for buses with the aim of increasing the efficiency of bus services was successful for cities including Curitiba (Brazil), Bogotá (Colombia), Quito (Ecuador), and Sao Paolo (Brazil) (Wright 2001). North American, European, and Australian cities followed suit once the cases were recognised as successful (Wright 2001).

Another example is the bus service improvements in Singapore. The bus service in Singapore was run by a monopoly, with minimal regulation for three decades, leading to a lack of enforcement and a poor service quality. The buses were nicknamed 'mosquito buses' because of their erratic and dangerous conduct of service (Cheong & Loh 2015).

However, bus operations in Singapore changed over a period of four decades (Menon & Kuang 2015). Currently, the bus system, together with the rest of the public transport system in Singapore, is considered a success story (United Nations Development Programme (UNDP) 2010).

Successes are also seen in Europe, for instance, in the UK and Germany. The success of London was gauged by significant reductions in cost and subsidy and an increase in welfare (Mackie & Preston 1996). While in Winchester, buses became cleaner following Quality Bus Partnerships (Wall et al. 2008). Also in Britain, concessionary bus travel for the elderly was a success, as could be seen by increased patronage and better access (Mackett 2014). In Freiburg, a cheap monthly travel card improved the bus system at difficult political and financial times in 1984 (Bratzel 1999).

Reported failures or recurrent issues include overcrowding on buses and bus bunching, both of which are derived from reliability issues (Leong et al. 2016). It seems that issues with service quality, such as noise, comfort, and information, are never fully solved. For example, these problems are also experienced in Curitiba (Lindau et al. 2010b), which

is considered a success story (Lindau et al. 2010a), as based on White's (1997) interpretation, the Curitiba case has more positive outcomes than negative ones.

Additional reasons for failure include regulatory and operational aspects. Operational aspects require flexible and improved contract structures (White 1997), and strict regulation might hinder operators' innovation, as happened in Adelaide (Bray & Wallis 2008).

The New Zealand case shows that cost reductions often may be successful for operators and regulators, but not for the staff, as they result in staff reductions (Wallis 1995) and low salaries. These situations lead to a high bus driver turnover rate, as experienced in Israel (Ida & Talit 2015) and Melbourne (Stanley & Hensher 2008).

## 2.4 Bus operation processes

One characteristic of bus reforms is operational processes, which are influenced by market structures. Operations of bus services have changed throughout the decades, and Gwilliam (2008a) describes a chronological order, spanning four decades.

Pre-1980, the emphasis was on cost structures and demand patterns (Gwilliam 2008a). Demand evaluations and cost structures were published in *The Demand for Public Transport* published by the Transport and Road Research Laboratory in 1980 and subsequently in Webster and Bly (1981 and 1982). This research was later superseded by an updated practical guide (Balcombe et al. 2004) and publication (Paulley et al. 2006).

The 1980s were characterised by market regulation and competition. The issues of choice regarding competition 'for' or 'in' the market dominated the scene (Gwilliam 2008a). This approach was largely influenced by the need to deregulate, which led to reform. Great Britain was a pioneer in bus service reform followed by Scandinavian countries (Alexandersson 2010). Before discussing market competition in further detail, it is essential to discuss market regulation.

### 2.4.1 Market regulation

The British case provides a good overview with regard to issues arising from deregulation. The concept of regulating or deregulating bus services led to a heated debate in the early 1980s (Banister 1985, Gwilliam et al. 1985a, Beesley & Glaister

1985, Gwilliam et al. 1985b). The idea behind deregulation was to fragment large bus operators and ensure fairer competition between public and private sector operators (Banister 1985). The envisaged benefits were mainly related to reducing economic costs and preserving employment in the industry (Beesley & Glaister 1985). The overall argument against deregulation questioned the viability of operations, the quality of competition, and the improvement of cost efficiency. Eventually, deregulation was implemented in Britain, outside London.

London was excluded because it had just emerged from the 1984 London Regional Transport (LRT) Act, which determined the Greater London public transport network (Newton 1993). The LRT Act of 1984 required bus routes to undergo competitive tendering (Glaister & Beesley 1991). In hindsight, the competitive tendering approach adopted in London was better than the deregulated process in the rest of Britain. Beesley (1991) later acknowledged that high expectations and obstacles to freer markets were largely unforeseen. The consequences involved faster patronage reductions, higher fares, and poorer service levels (Mackie et al. 1995, White 1997).

In the 1980s, New Zealand followed suit in deregulating the bus market (Bollard & Pickford 1998), and a decade later, Japan did the same (Sakai & Takahashi 2013b). The positive outcome in New Zealand was the elimination of the government as an operating and regulating body. Deregulation led to increased competition, efficiency, and increased service quality (Bollard & Pickford 1998). In the Japanese case, this led to three outcomes. First, the market structure did not change, because the bus companies had been accustomed to a regulated environment for over half a century. Second, unprofitable routes required subsidisation by the municipalities, but it was necessary to eliminate disorderly subsidies and build a system where operators were independent from subsidies. And third, management contracts at a garage level (five-year gross cost contracts implemented on a garage-by-garage basis) significantly improved the cost efficiency of the operators (Sakai & Takahashi 2013b).

### 2.4.2 Market competition

Three typical market structures exist. These are ‘no competition’, ‘competition in the market’, and ‘competition for the market’.

*No Competition*

A situation in which there is no competition is referred to as a monopoly. Monopolies can be owned publicly or privately. Where the bus service is nationalised, there is 'no competition', hence the operations are implemented through a public monopoly whereby the government plans and operates the bus service. An example of a similar operation is in Chennai, India (Badami & Haider 2007).

In the United States, operations are through a public monopoly. The federal government funds public transport, and public bus organisations provide the bus service. These organisations form part of the American Public Transportation Association (APTA) (Roschlau 2008).

Public monopolies are rarely a success (World Bank, PPIAF 2006). Problems include poor service, and the need to conform to government guidelines, which leads to over-staffing and associated high salary costs. The operator cannot oppose the government because it is a government agency, and there is the possibility of a lack of funding and issues with fare increase securities. Additionally, the operator becomes more powerful than the regulator (World Bank, PPIAF 2006).

Public monopolies are considered in three circumstances: firstly, when there is a lack of interest from private companies; secondly, when enforcement cannot be done on an exclusive franchise or operating right to a route or area, and thirdly, when there have been several failed attempts to improve the bus service through the private sector, due to, for example, criminal activities or the government's failure to fulfil its obligations (World Bank, PPIAF 2006). The problem with private monopolies and direct operator subsidies is that they create an ideal environment in which trade unions have a significant say. Thus, they can start dictating wages, favour inefficient operating practices, and strongly resist change (Blundred 1991).

The view that public monopolies may be unsuccessful is, however debatable as there are successful city authorities that deliver high quality public transport, as does Transport for London (TfL). TfL has successfully created an integrated transport authority since 2000, and cities like Sydney (Australia), and Auckland (New Zealand), used it as a model to build their own success stories (Badstuber 2015). The difference between unsuccessful public monopolies and successful ones, such as TfL are that the

latter managed to provide an integrated network, easy to use services, have strong leadership skills, exploit potential, think strategically, and build on its successes (Badstuber 2015). These successes have led to growth in bus patronage as a result in the number of bus kilometres run, which over a period of seven years (between 2000 and 2007) increased by 28% (White 2008). This increased use of buses in London is attributed to efforts coming from bus operations and other policies, such as, adopting a completely low-floor fleet, the implementation of the congestion charge, reduce boarding time by providing off-bus ticketing, and provide better provision of information for passengers (White 2008).

*Competition*

In competitive tendering, an operator or a consortium is awarded exclusive rights to operate a route or an area with a network of routes following a competitive process (Hidson & Muller 2003). Competitive tendering is applied in both the remaining market structures, either in competition 'in' the market, or in competition 'for' the market.

In 'competition in the market', operating rights are granted to private companies, and on-street competition between operators provides the opportunity for more innovation and specialisation within the private sector (Badami & Haider 2007, Tang & Lo 2008). Cases where similar liberal regimes operate include Britain (outside London) and New Zealand (Finn 2003).

'Competition for the market' allows open competition between different transport operators. This type of market structure is typically applied where local operators are not available, or where competition in the market is not economically feasible (Cambini & Filippini 2003). The regulating authority plans the service, and private companies compete for the operation of the bus service. The bus service in London is a typical example of this approach, where companies compete for the bus routes (White 1999).

In the Malta bus reform, the approach used was competition for the market, under an area net cost contract. The area net cost contract involves an authority giving exclusive rights to a bus operator to operate in an area, where the area refers to Malta. These contracts are typical of competitive tenders where the operator retains all revenue. If the bus service in the area were unprofitable, the authority would need to pay a subsidy (World Bank, PPIAF 2006).

The 1990s saw the composition and mechanisms of competition franchises (Gwilliam 2008a). The need to deregulate in England led to the 1985 Transport Act, which stipulated that deregulation should have rules. These rules were related to safety and operator performance; in addition, authorities could subsidise services for social necessities, and all bus operators had to have access to bus stations (Mackie & Preston 1996).

Four issues emerged from competition: mergers, residual regulation, passengers' value of service stability, and tendering (Mackie & Preston 1996). The first issue envisaged that economically disadvantaged small bus companies might join the larger, more powerful companies. Secondly, elements of regulation still emerge in deregulation; it seems that there is never complete deregulation. Thirdly, what concerns passengers is ultimately service stability. The fourth and final issue is tendering, which leads to franchised bus companies taking over because they are more powerful than smaller companies.

European institutions experimented with different organisational forms that worked towards achieving the best consistent competitive tendering approach. One of the outcomes of the European Union's concerted effort to improve transparency to potential entrants to the market was through the regulation 1893/91 (van de Velde 2003), which stipulated the details that should be included in public service contracts. Details included the provision of services that satisfied regularity and quality, specified rates to be charged to categories of passengers, the validity period of the contract, and penalties for failure to comply with the contract (European Commission 1991).

It seems, however, that there was no one method that fitted each case, and every country chose a system that was adaptable to its case (Gwilliam 2008a). This situation was the result of previous practices and historical rights in a range of countries, including Germany, Switzerland, Spain, and Italy (van de Velde 2008).

After being applied in London, competitive tendering gained momentum in Scandinavia, the Netherlands, and France (excluding Paris). Differences in all cases emerged, including tendering for routes or for networks, allowing or not allowing the operator to implement service design, methods of awarding contracts, the contents of contracts, and incentive mechanisms (van de Velde 2008).

The ‘Adelaide Model’ in Australia followed this method of market strategy (Bray & Wallis, 2008). The contract was based on a ‘5+5’ system, where if the service was not satisfactory during the first five years, the contract was not extended for the following five years. Modifications to the service included changes in the operators, routes, and payment structure. This resulted in an overall improvement in bus service quality, while bus patronage increased by 15 percent in 2007, and unit operating costs were reduced.

Another example that shows distinctive aspects and adaptations according to specific situations is that of TransMilenio (Bogotá, Colombia). Here, competitive tendering was used on several parts of the project, including routes and advertising. This case is known as a hybrid model, which operates without a subsidy (a system in which both public and private sectors have responsibilities for the delivery of the service). The advantage of this is that it avoids the chaos that features in free market competition (Gilbert 2008).

However, as the case of Melbourne (Australia) shows, there is now a slight shift from competitive tendering to negotiated performance-based contracts (Kavanagh 2016). These approaches can have complementary roles (Hensher et al. 2013).

### 2.4.3 Recent developments in market competition

Throughout the early 2000s, competitive tendering emerged as the preferred option to reform the bus system. Competitive tendering is chosen because it is known to reduce services costs, improve customer service, and encourage operator innovation (Hensher & Stanley 2010). The acquisition of this method happened in different adjusted versions depending on the countries adopting it. As an approach in the 21$^{st}$ century, it has also been adopted outside Europe, for example, in Australia, e.g., Adelaide (Bray & Wallis 2008); Singapore (Menon & Kuang 2015); and Santiago (Muñoz et al. 2014).

Experience with the use of competitive tendering in the Netherlands demonstrated that three main problems exist with this approach. These problems are related to contracts, markets, and organisations (Hensher & Stanley 2010). Excessive requirements by the authorities restrict contractual freedom for operators. Another issue related to contract contents is the dearth of effective incentives. Such incentives are particularly linked to the financial aspects (Eerdmans et al. 2010).

Market problems are related to a mismatch between expectations and realities. Reasons for such mismatches include not having a market, and the counter productivity of policies, such as having policies that are more focused on car mobility rather than on public transport (Eerdmans et al. 2010).

Organisational issues are defined as cultural differences between authorities and operators, and operator failures. Authorities may lack the necessary expertise in competitive tendering and suffer from knowledge management issues, such as not knowing the actual operational cost of contractual requirements. Operator failures are associated with authorities' performance. Possible reasons for failure are related to the chosen organisational form or limited operator experiences (Eerdmans et al. 2010). It was also observed that authorities have very high expectations about the performance of the operators, which are often proved wrong (van de Velde et al. 2008). Moreover, observations of competitive tendering concluded that after the first round of tenders, costs increase (Hensher & Stanley 2010).

Five main lessons can be learnt from competitive tendering. First, authorities and the operators should work along the same lines. Second, cooperation between operators and authorities is important because cooperation provides better solutions. Third, underperformance by the operator should be strongly penalised. Fourth, the penultimate lesson is that qualitative judgements diminish strategic bidding. Finally, operators' incentives should target the authority's needs (Eerdmans et al. 2010).

Negotiated performance-based contracts (NPBC) are an alternative solution to competitive tendering. The difference between NPBC and the latter is concerning the value of a product or service. Negotiation creates it whereas competitive tendering determines it (Hensher & Stanley 2010).

While competitive tendering is similar to an auction that determines the service value, in NPBC, where operators and regulators disagree, they work together to find an agreed solution (Kavanagh 2016). NPBCs are preferred, as they are more likely to form trusting partnerships, especially when an incumbent operator has the option to tender, rather than being required to tender (Stanley & Hensher 2008).

NPBCs and related trusting partnerships depend on the five Cs, which are 'common', 'consistency', 'confidence', 'competencies', and 'commitment' (Kavanagh 2016).

- Common refers to similar core objectives tied to public policy purposes;
- Consistency is influenced by the behaviour and direction from the operator and the regulator;
- Confidence is the regulator's trust in the operator to deliver;
- Competencies refer to mutual trust and respect in the regulator and operator knowledge and capabilities; trust involves the operator and regulator abiding by the agreed rights, risks, and obligations that compose a professional working relationship based on good faith, continued transparency, and consultation (Walters & Jansson 2008).
- Commitment refers to the involved parties' principles in making and keeping arrangements, and their behaviour (Hensher & Stanley 2010).

To date, there seems to be a dearth of published cases regarding NPBC, apart from Melbourne, Australia (Stanley & Hensher 2008, Kavanagh 2016); the Netherlands; and France (Currie 2016). In practice, conflicting objectives, complex operations, and unexpected events might hinder the formation of NPBC (Currie 2016).

After the bus reform in Malta, during the nationalised service, the government was negotiating behind closed doors. However, this approach seems to have been applied out of necessity rather than being a specific decision to choose an NPBC.

## 2.5 Regulation and Related Issues

As the cases of Britain (outside London), New Zealand, and Japan show, governments choose deregulation mainly to avoid financial and administrative burdens. Recently, deregulation has regained popularity; it has been implemented in Portugal, Norway, Poland, Hungary, and the Czech Republic (van de Velde 2014).

Deregulation, however, has negative impacts on operating costs, public expenditure, bus driver salaries, and network design (White & Turner 1991, White 1997). Eventually, governments resort to choosing some form of regulation.

A regulatory culture is necessary, and it should be associated with a strong enforcement system, as in the case of Curitiba (Pienaar et al. 2005). Moreover, regulators need to

have the necessary skills to implement and monitor the project, as was learned from the case of Cape Town, South Africa (Naudé 2003).

Enforcement done by regulating authorities provides at least a minimum level of service and contributes to enhancing the opportunities for mobility (Pienaar et al. 2005). However, enforcement refers not only to enforcing the operator, but also the illegalities on the road that deter the bus service. Illegalities may include, amongst others, illegal parking (Cairns et al. 2008).

Patterns of operation reveal an existing regulatory cycle that goes through private competition, unregulated private monopoly, regulation of the private monopoly, nationalisation, and further regulatory reform to, finally, a private competitive supply (Preston 1999, Gwilliam 2008b). Using the British model to evaluate the impact of bus deregulation Preston and Almutairi (2014) conclude that welfare impacts are negative, and they suggest the implementation of re-regulation that is similar to the case of London, where competitive tendering and regulation led to subsidy reductions and welfare gains (van de Velde 2014). Thus, regulation is necessary in public transport operations.

The need to regulate derives from the need to provide an efficient and attractive public passenger service to the community; indeed, competent authorities are bound to guarantee such a service (van de Velde 2003). However, ensuring regulation is not easy. Regulators face issues related to contract details, market limitations, and cultural differences (Eerdmans et al. 2010). Some authorities provide little freedom and/or few incentives for the operator. Indeed, operators might be given rigid requirements to follow (van de Velde 2008). This issue might be linked to politicians' interest in obtaining factual results, such as an increase in patronage numbers, rather than understanding the synergies of operators and authorities (Eerdmans et al. 2010).

### 2.5.1 Methods used to comply by contractual agreements

Suitable contractual incentives are difficult to find. In the Netherlands, for instance, bonus incentives are too small to make an impact on the operator, whose performance would eventually effect customer satisfaction (Eerdmans et al. 2010). Market limitations occur when there is no market, and the demand for buses is negligible for

cost efficiency. Inadequate demand is associated with counterproductive policies that, for instance, support car use.

Cultural differences refer to diverse views between operators and authorities. Authorities might be surprised by operators' attitudes, and misunderstandings between the two may occur. In addition, knowledge management within authorities might be restrictive due to limited human resources and constrained because of staff turnover, which hinders knowledge transfer (Eerdmans et al. 2010, Rye & Wretstrand 2014).

Another method of regulation is through Quality Bus Partnerships (van De Velde & Wallis 2013). They are either formal or informal agreements between local authorities and bus operators, which identify measures to enhance bus services in a defined area (Rye & Wretstrand 2014).

Typically, authorities provide traffic-management schemes, which assist bus services and operators to provide a good quality bus service (Whelan et al. 2001). These agreements are voluntary and rely on the operators' word that they will perform (van De Velde & Wallis 2013).

The Tyne and Wear 'Superoute' study enhances the importance of cooperation between the authorities and the operators for these agreements to succeed. These practices are well established in England. Nonetheless, another English case study, Greater Manchester, shows that such practices alone do not reduce traffic congestion (Davison & Knowles 2006). Rather, quality bus partnerships have to form part of a comprehensive package of policies that encourage bus use, such as frequency and reliability (Hensher et al. 2010). Such partnerships work with a carrot and stick approach, where for instance, the authorities charge for congestion, and operators provide an attractive bus service (Mackie 1999).

### 2.5.2 Regulatory Capture

Problems tend to arise within regulating bodies, as such entities are part of the institutional framework of government, making them prone to political agendas. Political agendas typically have short, unrealistic timeframes, which depend on a legislature (Hensher & Stanley 2008a).

In addition, political interference may have negative consequences; for example, the interference of politics with regulation may result in regulatory capture. When regulatory capture takes place, politics acts in the interest of the few, that is, favouring particular operators (Laffont & Tirole 1991). Regulatory capture is at times difficult to distinguish from corruption, where public entities or individuals deliberately involve themselves in procurement scandals. In 1993, in France, a series of such scandals led to the "Sapin law", which led to strict policies against corruption in the economic market (Walters et al. 2000, Gwilliam 2008b).

Another form of capture is when governments "outsource their brains" (Currie 2016, p. 16), which means that they unnecessarily provide useful information to operators. Operators tend to be more experienced than regulators regarding the operation of a bus service, so inexperienced regulators may fall prey to the capture of private interests, which happens especially in NPBCs (Currie 2016). In such cases, an incumbent operator might pressurise the government authorities for the operator's benefit. Thus, regulators require more knowledge regarding good practices in tendering and franchising (Currie 2016).

To avoid the regulator being captured during negotiations, four processes should be included. The first process is independent performance benchmarking, which ensures adequate performance is maintained through KPIs and competitive tendering. Secondly, 'open book' approaches are used for contractor costs and accounts, which are done through an independent auditor. Thirdly, independent auditors are included during the negotiation process. Finally, the fourth process includes the publication of contracts (Hensher & Stanley 2010).

Issues of regulatory capture are still subject to continued debate. In 2008, Hensher and Stanley (2008b) encouraged the continuation of the debate while in the Thredbo 14 Conference (International Conference Series on Competition and Ownership in Land Passenger Transport) of 2015, it was concluded that more discussion was required regarding regulatory capture (Paget-seekins & Walters 2016).

### 2.5.3 The role of institutions

Changes in institutions influence the transport strategy and the way forward for a public transport system. The cases of New Zealand and Israel provide two different outcomes

following institutional reorganisations. These outcomes highlight the importance of context.

The case of New Zealand (Gibson 2010) suggests that institutional reform is necessary before regulatory reform takes place. In 2005, in New Zealand, mergers occurred between Transfund NZ and the Land Transport Safety Authority, which became Land Transport NZ. Later in 2008, Land Transport NZ and Transit NZ became the NZ Transport Agency.

Centralisation of authority, as happened with the NZ Transport Agency, allows the administration of transport funding through a single authority (Gibson 2010). The centralisation of authorities facilitates efficiency and gives power to public transport, but may lead to tensions because of increased regulation and the rigidity of, for instance, the contract structure, as in the case of London (White 1997).

Conversely, as observed in the case of Israel, when the centralisation of authority is at a national level, it may deter regulation (Ida & Talit 2015). Apart from negatively influencing regulation, the over-arching role that is adapted by the authority causes a lack of enforcement on levels of service. Consequently, people who are dependent on public transport suffer from an unregulated service (Ida & Talit 2015).

Institutional reorganisations create new cultures and new working environments, leading to increased risks of loss of knowledge and strategic thinking. These changes take around three years to stabilise (Marsden & May 2006). Hence, in any consideration of institutional reform, benefits should outweigh the implied costs.

### 2.5.4 Transport and Land Issues

In line with regulation and institutions, another topic emerges, that of the need to combine public transport needs with land use legislation. The cases of Curitiba, TransMilenio, and Seoul are clear examples of the successes achieved from such links.

For instance, in Seoul, a stream that flowed through the city was built upon to serve as a road. Together with the bus reform, changes to land use included the removal of the major road and regenerating it to the original stream, promoting it as a public space (Allen 2013). Similarly, TransMilenio in Bogotá was associated with a quality-of-life improvement strategy where housing was affordable to low-income families (Bassett &

Marpillero-Colomina 2012). Additionally, Curitiba was planned and developed as part of an integrated land use-transport plan (Rabinovitch 1996), as transport and land use are interdependent systems.

## 2.6 Public transport policy

Public policy is defined as the 'public and its problems' (Dewey 1927), and public transport follows suit. Public transport policy directly includes the different segments of society that use the service; it also indirectly affects other mode users who are served by the general transport system. Apart from affecting people, public transport policy influences infrastructure and operations.

In the context of this research, public transport refers to one mode: the bus. Buses are the most basic form of public transport and are a representation of democracy through which every segment of society is mobile and can reach goods, services, and activities (Litman 2012, Peñalosa 2013).

A good public transport policy promotes the use of a bus system as the backbone of a public transport system, as seen in the cases of Curitiba (Brazil) (Goodman et al. 2006), and Singapore (Menon & Kuang 2015). The buses operate as the main mode of public transport that provides a basic transport service.

Should one system collapse, the public can always revert to using the bus. A pertinent case is industrial actions, which negatively affect travel times (Tsapakis et al. 2013). In 2015, the London Underground experienced several strikes by tube drivers, resulting from disagreements with Transport for London about the proposed night-time services. When this service was not in operation, commuters used the buses (Boyle 2015).

### 2.6.1 The role of politics in bus reform

Policy and politics are different, yet political will is necessary for the implementation of policy. Cases like New Zealand (Ashmore & Mellor 2010) and Transantiago (Muñoz et al. 2008) have shown that the work has to be executed within a legislature, unless the same politician is re-elected, as happened in Bogotá, where the mayor, Jaime Lerner, was elected three times (Pienaar et al. 2005).

If a politician is not interested in the project, it can be set aside. The lack of effective policy implementation hinders the strategy process as do complex political

relationships, as in the case of Cape Town in South Africa, where political decisions are still influenced by the pre-democratic period (Naudé 2003).

Although political will is an important success factor, politics may also lead to failure, as happened in Santiago. The transport minister who had the motivation to implement the project had to resign due to an unrelated conflict, and the minister who followed had no transport background and slowed the project down (Muñoz & Gschwender 2008). Transantiago was initially publicly considered a failure (Muñoz & Gschwender 2008), but efforts were made for slow improvements in service quality (Muñoz et al. 2013).

### 2.6.2 European Transport Policy

As stated in Chapter 1, section 1.4, Malta is a member state of the EU. Since member states are obliged to follow EU directives, which filter down into local policies, it is necessary to put the perspective of the EU as an institution.

The European Transport Policy acknowledges that urban areas have an ever-increasing car use problem. The White Paper encourages the use of public transport, particularly as a share of a mix of transport modes. Intermodality is described as a way of easing accessibility and integrating non-motorised modes of transport (European Commission 2011a).

Initiatives to encourage public transport use include the use of trolleybuses, new ways of operating the service through Bus Rapid Transit, and the use of smaller buses during off-peak times, such as through 'transport-on-demand' services (European Commission 2011a). The EU also encourages procurement for fleets of low emission public transport vehicles, including buses (European Commission 2011b).

### 2.6.3 Policy Theories

The policy process is complicated (Sabatier 1991). Policy is a discipline on its own, which is adapted to other disciplines, including transport. The adaptability of policy and transport related issues results in ad hoc transport policy setting and implementation (Young et al. 1991, Roschlau 2008).

Since transport policy occurs in an ad hoc situation, context plays a major role in understanding the reason for selecting a particular policy theory (Slack et al. 2017). Policy theories have evolved during the past four decades. Sabatier (1991) points out

that theories evolve throughout time, such as the Innovation and Diffusion model (Rogers 1962) and the Institutional Analysis and Development Framework (Kiser & Ostrom 1982). Table 2.2 provides a summary of some of the current policy theories, and indicates transport-related research that applied the relevant theories.

Table 2.2 Summary of Current Policy Theories

| Theory | Abbreviation | Highlights | Specific Applications to Transport Research |
|---|---|---|---|
| Multiple Streams Approach | MSA | addresses the need for other processes to occur before an event that has a transitional impact | London congestion charge (Dudley 2013) |
| Punctuated Equilibrium Theory | PET | addresses internal change in subsystems in the absence of change in the wider policy environment | fuel economy policy in relation to carbon dioxide emissions from transport in North America (Perl & Dunn 2007) |
| Diffusion of Innovations Model | DOI | suggests that policy change occurs as a result of diffusion deriving from: learning, imitation, normative pressure, competition, and coercion | bike-rail integration in Bristol, UK (Sherwin & Parkhurst 2008) |
| Narrative Policy Framework | NPF | measures how narratives are used in policymaking | the contribution of information and communication technologies to public policy making in the US Department of Transportation (Epstein et al. 2014) |
| Advocacy Coalition Framework | ACF | people engage in politics to translate their beliefs into action | analysis of survey data of policy elites involved in land-use and transportation planning in four regions of California (Henry et al. 2011) |
| Social Construction Framework | SCF | examines group power influenced by the way that target groups are framed by policymakers | drinking and driving in the US (Houston & Richardson 2004) |
| Policy Feedback Theory | PFT | suggests that policy commitments made in the past produce increasing returns and make it costly to choose a different path | reference to the development transport policy in the US after World War II (Pierson 1993) |
| Institutional Analysis and Development | IAD | focuses explicitly on actors, institutions, and context | analysis of institutional settings in waterway systems in America and Holland (Hijdra et al. 2015) |

Source: Adapted from Sabatier & Weible 2014

Cairney and Heikkila (2014) grouped the policies according to common characteristics. The first group emphasises the stages of the policy process (MSA, PET, DOI); the NPF and ACF are used to focus on policy formulation while the SCF and PFT refer primarily to policy design and dynamics. The IAD Framework is unique because it has a more generic, investigative scope. It refers to institutions as rules, and considers how they are created and how they affect human behaviour. Since institutions determine policies and their implementation, which then influence people's behaviour, the IAD Framework is the selected theoretical framework to analyse the policy documents in this research.

### 2.6.4 The Institutional Analysis Development Framework

The factors required to achieve success over a short period are the right institutional structure, flexible funding, and a strong political champion. Marsden and May (2006) argue that these factors were the main ingredients for the success of the London experience with the bus service.

Institutions play a key role in shaping policy for bus services. They set the rules (Ostrom 1986), and these rules are shaped by the social, legal, and governmental order of a place, based upon a specific historical setting (Room 2011). Culture and values play a role in defining and maintaining institutions (Stough & Rietveld 1997).

Culture is defined as a slow changing, yet stable platform shaped from values and rules (Batten 1993). On top of this platform then, much faster activities occur, which derive from technological advancements and improvements (Stough & Rietveld 1997), for instance, the introduction of electric mobility.

Apart from rules, another important component within the (IAD) Framework is the 'action arena', which comprises two variables, namely, the 'action situation' and the 'actor' (Ostrom et al. 2014). Seven characteristics describe the 'action situation': i) the set of participants, ii) the positions filled by participants, iii) the set of allowable actions and their linkage to outcomes, iv) the potential outcomes linked to individual sequence of actions, v) the level of control each participant has over choice, vi) the information available to participants, and vii) the costs and benefits of actions and outcomes (Ostrom et al. 2014). The actor could be a single individual or a group, representing a corporate actor.

*Limitations of Institutionalism*

John (2012) criticises the concept of institutionalism on five points. The first point is that personal interest may influence decisions, leading to a weakness in institutions. Secondly, social context influences the political environment of a country, creating variation and change in political institutions. Thirdly, this framework represents a static view of the policy process, in that it fails to explain why policies change. The penultimate point is that institutions depend on political choices, and political actors change institutional functions. Finally, the interactions between institutions and the decision-making process are complex.

These five points are features that shape and influence institutions. They should not be considered as criticisms but as added information to consider when using the IAD framework approach.

### 2.6.5 Applications of the IAD Framework in Transport

The IAD framework has been applied twice in transport research. In the first instance, it was used by Polski and Ostrom (1999) to analyse traffic policy in Minneapolis and Boston in the US. In the second instance, it was applied by Hijdra et al. (2015) to analyse the waterway infrastructure in the Netherlands and the US.

The first case was used to show the type of rules that should be considered to carry out the analysis. These are: i) position, ii) boundary, iii) authority, iv) aggregation, v) scope, vi) information, and vii) payoff.

In the second case, the same seven rules were used for the analysis of the waterway infrastructure. The findings helped understand the decision-making process. Even though the US and Dutch traditions are different, the situations are similar, in that they have a centralised system to manage the waterways, and they focus on providing efficient transport solutions. Additionally, the national waterway authorities play a main role at the planning and implementation level. Differences include the responsibility of a single ministry in the case of the Dutch, whereas waterway users have a more formal role in the US, and the latter also have mandatory local co-funding. Moreover, in the Dutch case, design responsibility is outsourced to contractors, whereas in the US, this is the role of the Corps of Engineers (Hijdra et al. 2015).

In Malta's case, the role of institutions was essential to devise the public transport reform. The case of Malta's public transport reform supports the idea that institutions have a two-way role in policy making. This dual role supports what Lindblom (1968) contended, that is, that policy is a cycle that has neither beginnings nor ends. Bridgman and Davis (2003), however, warn that this cycle is complex; revisiting several issues is a necessary element of the process. Such procedures lead to the development of a particular policy and contribute to the emergence and maintenance of organisations, whose behaviour may result in institutional change (Rietveld & Stough 2004).

## 2.7 Stakeholders

Stakeholders can involve interested parties from all aspects of the bus service industry. Mahmoud et al. (2012) provide a more technical definition of the term 'stakeholders'. They state that stakeholders represent three main features of the service-delivery chain: modelling, operation, and end-user. These can include the regulator, operator, unions, and customers, amongst others.

Two key elements that ensure an all-inclusive approach amongst all stakeholders are transparency and simplicity (Hensher & Wallis 2005). The crucial ingredient to achieve these two elements between the regulator, operator, and unions is trusting partnerships, where strong trust secures commitment, cooperation, and collaboration (Walters 2010). Whereas continual information dissemination is necessary to customers (Pucher et al. 2005), regulators and operators should not take the top-down stance. Instead, all stakeholders should be included at the strategic, tactical, and operational levels (Wretstrand et al. 2014).

Providing a public transport service that is appealing to all stakeholders is a difficult task (Sakai & Takahashi 2013b). For instance, bus operators' requirements are different from bus users' requirements. An ideal scenario for bus operators includes providing the required minimum level of service at the lowest cost possible (Hensher & Houghton, 2004).

Bus users' requirements vary by several variables, such as age, gender, journey purpose, and location, thus creating different segments (Lyons et al., 2008, Scheiner & Holz-Rau, 2007). Hence, bus service characteristics in different locations may influence their customers' evaluations differently. For example, in a study by dell'Olio et al. (2011) in

Santander (Spain), bus users expected a punctual, clean, and comfortable bus service while in a study in Edinburgh (Scotland), bus users expected a calm and serene experience (Stradling et al. 2007).

Stakeholders' views are essential because their satisfaction serves as an indicator of service quality (Wang et al. 2010). Customers base their evaluations of the bus service directly, from their experiences (Meek et al. 2009, Hensher et al. 2010), or indirectly, from hearsay (Bajada 2015). If customers are not satisfied with the service, and the service quality delivered does not meet their needs, then they are likely to switch to using alternative modes of transport.

It is useful to shift the focus on the views of different stakeholders using what Cairney (2012) called the telescope metaphor. This metaphor refers to zooming in and out to analyse individual interest groups or organisations, in this case, zooming in on bus drivers, operators, regulators, and bus users.

Bus drivers are an important stakeholder group, but they are often ignored. The case of Israel shows that bus drivers have an important role in a bus service. Issues related to bad bus driver behaviour have been experienced in Israel (Ida & Talit 2015). However, better conditions for bus drivers reduce bus driver turnover, meaning bus drivers become more experienced at the job. Consequently, their manner of driving improves, and customers feel secure.

### 2.7.1 Tourists as valuable stakeholders

One example of bus users is tourists (Mahmoud et al. 2014). Tourists are valuable stakeholders; they use the bus service, and from their experiences, they form an opinion about it. Often experiences, particularly negative ones, have a negative impact on the tourist (Howard 2009), who is more likely to recall it and to lose trust in the service.

Tourists vary by type; they can be domestic (that is, visitors resident within the country of where the activity takes place), or international (people taking part in activities outside their country of residence) (World Tourism Organization UNWTO 2015). The purpose for visiting a destination varies, including holiday, business, and education. The reason tourists visit a location influences the length of stay, and economic elements affect the type of accommodation selected, the transport used to travel to the

destination, and the transport used while the tourist is visiting (World Tourism Organization UNWTO 2012).

When tourists return to their country, they serve as ambassadors who relate their experiences to their family and friends (Jalilvand et al. 2014). They also post blogs and reviews of their travels on social media and other sites, which can influence individuals outside their immediate social circles (Litvin et al. 2008). Hence, hearsay can have an indirect role in influencing customers' attitudes. The information that tourists obtain from their friends who might have visited the country before them might influence their attitudes towards the bus service (Venkatesh 2006, Kim & Lee 2011). Consequently, the tourists need to be catered for and served well so they subsequently share positive experiences.

### 2.7.2 Expectations and their effect

All stakeholders' expectations are important for a healthy relationship between them, and for the delivery of a public transport service (Beirão & Sarsfield Cabral 2007, Hensher et al. 2008). Customers' expectations are what bus users feel that a service provider should offer, rather than what they actually offer (Teas 1993).

Expectations play a role in influencing people's evaluations of a bus service because they serve as individual standards or reference points. There are arguments, however, regarding whether to include expectations as determinants of service quality. Robledo (2001) described two conflicting paradigms. The first paradigm is the 'disconfirmation paradigm' – customers evaluate a service by comparing their perceptions of the service with their expectations (Oliver 1980). As an extension to this paradigm, Andreassen (1995) argued that customers' expectations and perceptions of service quality lead to an overall customer satisfaction. The second paradigm is the 'perception paradigm' – expectations are misleading, and customers' perception is required (Hastorf et al. 1970).

This research considers both paradigms. If expectations of the promised service are high, and the service performance does not live up to these expectations, the stakeholders will have negative evaluations of the service (Muñoz & Gschwender 2008). On the other hand, in agreement with the 'perception paradigm' (Hastorf et al. 1970), while it is important to consider and acknowledge expectations, they should not

be considered as major factors that influence service quality. This is because of the subjective nature of expectations.

### 2.7.3 The revealing aspects of discourse

Expectations are linked to reality or to objective truth (Feindt & Oels 2005). For people to measure their expectations, the reality, in this case, the bus service reform, needs to be implemented. The reality here is the actual performance of the bus service reform. The objective truth, therefore, is a reference point people use to evaluate the bus service based on their experiences and perceptions that form their expectations. This truth leads to discourses that people make when discussing a subject, such as the bus service reform (Feindt & Oels 2005).

Discourse is a combination of interactions within communication (Sharp & Richardson 2001). These interactions are a combination of "ideas, concepts and categories through which meaning is given to social and physical phenomena, and which is produced and reproduced through an identifiable set of practices" (Hajer & Versteeg 2005 p. 175). It is a way "of talking about and understanding the world" (Jorgensen & Phillips 2002 p. 1), or an aspect of the world, such as the impact of the bus reform on different stakeholders and their behaviour.

As discourse depends on selected phrases, and on the cultural background of the case study and its context, the truth is conditional (Hewitt 2009). The truth within discourse therefore, is to provide "coherent and consistent explanations of events" (Jacobs 1999 p. 208).

Discourse analysis is relatively new in transport research, and it has been applied in a small number of studies (e.g., Guiver 2007, Dickinson et al. 2010, Hickman & Vecia 2016), at times originating from different disciplines, such as sociology (Green et al. 2012) and European studies (Richardson 1997, Richardson & Jensen 2000).

The study by Hickman and Vecia (2016) adopted a 'quali-quantitative' approach to discourse analysis, using the Q methodology. As the term 'quali-quantitative' implies, this methodology combines qualitative and quantitative techniques to analyse discourse, accessing personal experiences, preferences, and beliefs (Stevenson 2015).

Other works that take a purely qualitative approach reveal that the analytical method in each case is unique; however, it seems that the two most influential philosophical approaches are the Habermasian and the Foucauldian (Sharp & Richardson 2001). Both approaches relate to social change, and the idea of the bus service reform in Malta was to create such a change by achieving a modal shift from car use to bus use.

The Habermasian approach is linked to norms, where changes that take place at the social level influence linguistic practices (Sharp & Richardson 2001). Taking this approach implies taking a normative viewpoint that is bound to predefined judgement (Hajer & Versteeg 2005). Contrastingly, Foucault avoids the "prescriptive force" (Hajer & Versteeg 2005 p. 181), and focuses on power and the opportunities it provides for the social world (Jorgensen & Phillips 2002). As discussed by Foucault (1980), power provides knowledge, and should be seen as productive rather than oppressive; for instance, as explained by Jorgensen and Phillips (2002), without the prison system, criminology would not exist.

Although this research partly applies a theory that includes normative beliefs, the discourse analysis cannot follow the Habermasian approach. This approach would be ideal if the research examined the decades of bus service provision, in parallel with governmental and cultural changes. This research, however, looks at a change imposed by 'power', where the government implemented the reform to encourage change. For this reason, the discourse analysis applied to the qualitative part of the research will adopt a Foucauldian approach.

The definition of discourse here extends to "ideology, strategy, language and practice that are shaped by the relations between power and knowledge" (Sharp & Richardson 2001 p. 195). The idea of 'actors' is used in the Foucauldian approach. The actors are the stakeholders that interact in the environment created by institutions, such as the government and its agencies. The stakeholders here position themselves within this environment, and their discourses categorise them. This categorisation is, however, not definite because, as is explored in this research, with changes imposed by public transport policy, ideas change (Hajer & Versteeg 2005).

## 2.8 Bus Service Quality

Bus service quality influences stakeholders and their expectations. Service quality has been defined as a measure of the level of service delivered and the extent to which it meets customer expectations (Parasuraman et al. 1985). As seen in Table 2.1, bus service quality contributes to the successes and failures of bus service reforms. Even success stories such as Singapore, Curitiba, and Seoul still suffer from issues related to bus service quality.

The Seoul experience teaches that particularly when using new technologies, trial periods are important for testing, and information dissemination is essential to avoid confusion (Pucher et al. 2005). Continuing the discussion of service quality, efficiency increases when travel cards are introduced, and customers do not have to pay the bus driver, as happened in London (White 1997).

In public transport research, including bus services, one of the methods that gauge service quality relies on the individuals' attitudes towards the quality of the different service variables (Pronello & Camusso 2011). Quality is influenced by the degree of user satisfaction, the cost of the service, and the policies that favour particular service standards (dell'Olio et al. 2010).

Research shows that improving bus service quality characteristics increases the chances of increasing patronage (Eboli & Mazzulla 2012). This is because service quality influences people's attitudes (Wall & McDonald 2007, Rohani et al. 2013). Consequently, service levels are included in contractual agreements to serve as baseline indicators for bus systems (Beirão & Sarsfield Cabral 2007). In this study, people's attitudes towards bus use before and after the bus service reform will be explored.

Service quality is considered an important component that influences bus use (Wall & McDonald, 2007, dell'Olio et al., 2011, Rohani et al., 2013). The quality of bus services encompasses several common characteristics. Table 2.3 summarises the bus service quality characteristics that are generally used.

Table 2.3 Common bus service quality characteristics applied in research

| Service quality characteristics | Authors/Researchers |
|---|---|
| safety, design/layout, location, quality of vehicles, availability, time spent in travelling, information about services, ticket systems and price levels | Andreassen (1995) |
| availability, accessibility, information, time, customer care, comfort, security, and environmental impact | European Committee for Standardisation (2002) |
| access and egress time, service intervals, on board vehicle time, the waiting environment, vehicle characteristics, interchange, reliability, information, marketing, simplified networks, accessibility and fare | Balcombe et al. (2004) and Paulley et al. (2006) |
| availability, accessibility, reliability, information, customer service, comfort, safety, fare, and environmental impact | Joewono & Kubota (2007) |

This research includes seven of the service quality characteristics used in the European Standard for service quality in public passenger transport EN13816 (European Committee for Standardisation 2002). 'Availability' is not included in this study because it is defined as "the service offered, in terms of geography, time frequency and transport mode" (European Committee for Standardisation 2002). For this study, it is assumed that the service available would be the bus as provided by the reform. Another factor, namely, 'fare', is included in this study because in the literature, it is considered an important factor (Andreassen 1995, Balcombe et al. 2004, Paulley et al. 2006, Joewono & Kubota 2007). Hence, the following factors are considered for this study: accessibility, information, time, fare, customer care, comfort, security, and impact on the environment.

Different studies have shown that the grouping of such characteristics depends on the attitudes of the population samples of the respective studies (e.g., Beirão & Sarsfield Cabral 2007) or on the travellers' profiles (Pronello & Camusso 2011).

Conversely, a common way of exploring and presenting service quality characteristics is through SERVQUAL (Parasuman et al. 1988 and Parasuraman et al. 1991). Examples of such practice in public transport research, including buses, are found in Fellesson and Friman (2008), Barabino et al. (2012), and Morton et al. (2016). In this approach, 22 indicators of service quality characteristics are grouped under five dimensions, namely, tangibles, reliability, responsiveness, assurance, and empathy (Parasuraman et al. 1991). Tangibles are described as the physical facilities that belong to the service, for instance,

equipment and employees' appearance. Reliability is the ability to provide a reliable and accurate service. Responsiveness refers to the timely provision of help to customers, assurance refers to the capacity to inspire trust among customers, and empathy refers to the ability to give individualised attention to customers (Barabino et al. 2012).

SERVQUAL has been criticised as being unstable in the way it produces the groupings of the indicators (Ladhari 2009). Another criticism is that it marginalises technical quality, which is an objective assessment of what the service organisation offers its customers (Nagata et al. 2004). As an alternative to SERVUAL and an adaptation to public land transport services, Bakti and Sumaedi (2014) developed P-TRANSQUAL. Taking Indonesia as a case study, they used four dimensions: comfort, tangible, personnel, and reliability. In Almería, Spain, SERVQUAL was modified to provide QUALBUS, using the same five dimensions but modifying two indicators within the dimensions (Pérez et al. 2007).

In this research, people's attitudes are gauged through ratings given to the eight pre-defined service quality characteristics. The approach taken is to focus specifically on the characteristics themselves and not to attempt to group them. Hence, it is best to describe the characteristics separately. The following sub-sections provide background information about each service quality characteristic used for this study.

### 2.8.1 Accessibility

Buses ease accessibility and mobility, and increase the opportunity for people to move from an origin to a destination (Litman 2012). Accessibility is often used to gauge equity in transport (Lucas 2012, Martens et al. 2014, Bastiaanssen et al. 2014), and equity in public transport ensures that the service is reached by all members of society, including the elderly and the disabled (Walker 2008). Hence, creating opportunities for mobility (Nordbakke 2013) increases accessibility and equity (Litman 2017).

Creating opportunities for mobility in a bus service involves including an adequate network that has high levels of accessibility (Belter et al. 2009) with suitable interchanges. An adequate network includes an integrated approach that links housing, land use, and the road network (Wu & Hine 2003). Such a system provides the optimal opportunities for bus users to reach their destinations. Curitiba (Santos et al. 2010) is an example of an integrated transport system.

Interchange increases opportunities especially when more than one mode of transport is involved (Balcombe et al. 2004). When interchanges take place within one public transport mode, such as the bus, it is suggested that these are reduced to the minimum number possible because they increase travel times (Drew & Rowe 2010).

Accessibility involves two elements: transport and activity (Simma & Axhausen 2004). The transport element includes boarding and alighting the vehicle. Reference is also made to passengers who need to access the bus by means of wheelchairs and pushchairs. Consequently, low floor vehicles are important for people with accessibility problems, who also include elderly passengers (Balcombe et al. 2004). Accessibility also influences people while in transit (Paulley et al. 2006), as these have to wait for others to enter/exit the bus.

Apart from vehicle-related aspects and travelling, the transport element also includes the route network that serves the passengers. Bus routes may have a combination of local routes that serve all stops; express routes that stop at main sites, such as airports; feeder routes that are local and stop at designated interchange locations; and commuter routes that may link suburbs that stop only at the destination (Wirasinghe & Vandebona 2011). Areas of high densities might have high demand; conversely, low demand areas would most probably have low service coverage, resulting in an inaccessible zone (Kim & Schonfeld 2013).

The activity element reflects the importance of getting to places to meet one's obligations (Stradling et al. 2007). Service frequencies may be limited in remote areas, potentially making accessibility a problem for travelling to and from a location.

In addition, inaccessibility to bus stops may hinder the use of the bus service. In order to avoid passengers having to walk long distances, bus stop locations are planned as near as possible to households (Balcombe et al. 2004). Generally, the accepted maximum walking distance to reach a bus stop is 400 metres (Biba et al. 2010), which is not the case in Malta. Given the size of the island and the heat in the summer months, the maximum walking distance to reach a bus stop is reduced to 150 metres (Malta Environment and Planning Authority 2003).

### 2.8.2 Information

Information is the systematic provision of knowledge about a public transport system to assist the actual use or the plan to use a public transport service (European Committee for Standardisation 2002, Paulley et al. 2006). Thus, a lack of information can act as a barrier to public transport use. On the other hand, new information often changes attitudes (Eagly & Chaiken 2007), and if it is wrong, users may discredit the service (Lyons et al. 2001).

People have different information-related needs and are motivated by varying factors. This requires public transport planners to have detailed knowledge not only of public transport users but also of non-users (Beirão & Sarsfield Cabral 2007), if they are to increase bus patronage.

Thus, information is combined with other factors to improve a public transport system, such as incentives and tailored services (Cairns et al. 2008). For example, when a real-time information system was introduced in Santander, information together with customer service played a crucial role in increasing public transport use (dell'Olio et al. 2011).

### 2.8.3 Fare

Fares are fundamental to the operation of public transport; they form a major source of income to operators (Paulley et al. 2006). However, an increase in fares generally leads to a decrease in patronage. This is discussed in the European and Canadian case studies presented by Potter and Enoch (2001) on affordable fares.

The European case focused on the Netherlands and France, where the authorities recognised from previous experience that affordable fares were necessary to improve public transport services sufficiently for more people to use them. Consequently, fare reduction was supported by means of subsidies, which indeed resulted in a boost in patronage numbers to the benefit of the operators (Potter & Enoch 2001).

The Canadian case was different; in contrast to Europe, the price of fuel was very low, hence attracting more private car use. This was a deterrent to bus use, and attracting patrons was not just a question of reducing fares. A package of policy measures was applied that encompassed a reduction in fares. This was difficult to support politically,

and the bus service became unstable, leading to a rise in fares and a decrease in bus patronage (Potter & Enoch 2001).

A characteristic of bus fares is that they are usually embedded in a fare structure, which involves set tariffs that could be defined by distance, population groups, and timing. The case of Freiburg shows that a well-defined fare structure, combined with other measures, can help increase bus patronage by also attracting new users (FitzRoy & Smith 1998). The system in Freiburg worked by structuring fares around season tickets that were cheap, that were transferable between household members, and that had extensive regional validity.

### 2.8.4 Time

Time is an aspect that is relevant to the planning and execution of journeys (European Committee for Standardisation 2002). A relevant component of this factor is operating time, which is influenced both by the service location and by peak time, which usually requires more frequency of service (Balcombe et al. 2004).

Another important factor is travel time (Jensen 1999), which is linked to a feeling of control. Hence, brief waiting times, fast journeys, and reliability determine transport mode decisions (Gardner & Abraham 2007). The shorter the travel time the faster destinations can be reached. Different mode users evaluate travel time in different ways. For instance, car drivers tend to estimate the journey by bus to take twice as long as by car (van Exel & Rietveld 2009). Thus, it is important to overcome these misconceptions if bus patronage is to increase.

Waiting time may be associated with stress and frustration if unexpected delays occur (Wardman 2004). Delays can be caused by the unreliability of a bus service, which derives from bus drivers not adhering to the scheduled timetable. However, reliability is not the only influencing factor. The frequency of a bus service also plays a role in attracting patrons. It depends on the area being served, for example, whether it is urban or rural, and it is influenced by the demand for and the distance travelled by the service (Balcombe et al. 2004).

Waiting times and travel times are also influenced by interchanging within modes (Wardman & Hine 2000). This has additional implications that are related to information provision through ticketing and coordination. Interchanging is successful

when there is no waiting time from one mode to another (Wardman & Hine 2000). However, in practice, it is difficult to provide such a service since delays occur due to congestion, vehicle disruptions, or accidents. Consequently, people prefer to use one public transport mode, unless changing is perceived to be easy and fast (Gardner and Abraham 2007).

### 2.8.5 Customer Care

Customer care is the provision of service elements that include a balance between the standard service and the requirements of customers (European Committee for Standardisation 2002). It also influences customer satisfaction. The latter is the result of a sequence of events that affect the general perception of an individual when using a service, namely, the customer experience (European Committee for Standardisation 2002).

Indeed, there is a causal relationship between the perceived quality of a bus service and customer satisfaction (Fujii & Van 2009, Friman et al. 2001, Friman & Garling 2001); if the quality is good, it is more likely that the service will be used (Lai & Chen 2011).

Disney (2009) suggested that there is a two-fold approach to improving customer satisfaction in public transport. First, there is the need to improve the infrastructure for a punctual and reliable service while the second approach is to make the customer feel welcome on board a vehicle that is clean and comfortable.

Customer care, therefore, is also influenced by commitment, customer interface, and assistance from staff (European Committee for Standardisation 2002). Consequently, customers expect assistance and information in the case of service interruptions, and good treatment from staff (Disney 2009).

However, operators are not always customer-oriented. For instance, in Sydney, the University of New South Wales needed a good bus service to the campus. Consequently, the university had to step in and ask the bus company to instil a culture of customer service. Similarly, in Auckland (New Zealand), the information regarding the bus network was not user friendly, which influenced its use, and the British bus industry has been criticised for failing to be sufficiently customer-oriented (Hutchinson 2009).

### 2.8.6 Comfort

Comfort is composed of service elements that make public transport journeys relaxing (European Committee of Standardisation 2002). These include the availability of seats, an ambience free from unpleasant smells, an uncrowded space, and a smooth ride (Beirao & Sarsfield Cabral 2007).

Belwal and Belwal (2010) included comfort as one of the top reasons for using bus services in the UK. Indeed, comfort is a crucial factor when considering bus use over car use (Grdzelishvili & Sathre 2011). However, comfortable conditions are not only restricted to on-vehicle environments, but also include the waiting environment, where conditions should be clean, safe, and sheltered from the weather (Balcombe et al. 2004).

### 2.8.7 Security

Security is a sense of personal protection that the public transport service provides to its customers (European Committee for Standardisation 2002). If public transport users feel unsafe, they will avoid using the service.

The literature shows that different levels of importance are given to security, depending on the research approach. In Sweden, a study required bus users to state their choices about security, based on four different pre-defined environments of footpaths leading to a bus stop. This study showed that security influences public transport use, such as women feeling uncomfortable using the bus in remote and dark environments (Börjesson 2012). Nonetheless, another study that looked at what attracts people to use the bus concluded that participants did not consider security an important factor (Kingham et al. 2001). When security is included with other factors in research, it is perceived as less important than other aspects, such as frequency and reliability of service.

Security also includes safety from accidents and safety from crime (Currie & Wallis 2008). Taylor (2007) identified safety and security as requirements if voluntary travel behaviour change is to take place; if a bus service is considered unsafe, people's evaluations of the service will be negative, which will eventually affect patronage levels. For example, in Cape Town, tourists are advised to avoid public transport, especially after dark (George 2003), thus associating an element of insecurity with bus use.

Insecurity while travelling is also linked to a sense of anxiety, particularly at night (Stradling et al. 2007). This is generally derived from co-travellers who misbehave. Thus, females and children's parents tend to be more concerned regarding safety issues (Mackett & Robertson 2000, Stradling et al. 2007).

### 2.8.8 Impact of the Bus Service on the Environment

The impact on the environment is the negative effect resulting from the provision of the bus service (European Committee for Standardisation 2002). This does not mean that buses pollute more than other vehicles. Indeed, buses are high-occupancy vehicles, and the benefit of using them is that they reduce the number of single-occupancy vehicles, such as cars, on the roads (Heath & Gifford 2002).

However, Kim and Dickey (2006) argued that amongst the external factors that influenced the bus system reform in Seoul were environmental concerns linked to the bus service itself. They claimed that 82% of the vehicle fleet still used diesel and a resultant 78% of the pollution emissions in Seoul originated from buses that ran on this fuel. Additionally, buses cause noise and vibrations, which affect residents negatively.

Similarly, Transmilenio used diesel for their bus fleet in contrast to other cities in Colombia, such as Barranquila, that had decided to use compressed natural gas (CNG) (Valderrama & Beltran 2007). The main reason for using diesel was that Bogotá is located on a high altitude, and such alternative energy sources had never been used in these conditions. The main concerns were related to the associated fragility of CNG powered vehicles at a high altitude. Consequently, the bus system, which served seven million inhabitants, could not afford any disruption in service resulting from an inefficient fleet powered by an unreliable technology.

These different components indicate that the bus service may affect the environment. However, when considering other modes of transport, like the car, the bus has more environmental benefits. Furthermore, improvements leading to cleaner buses make buses even more environmentally friendly (Hess 2007).

## 2.9 Benchmarking

Understanding which service quality characteristics influence people's attitudes towards the bus service is an important initial step before benchmarking (Hensher et al. 2003). A

customer service quality indicator (CSQI) was specifically designed for this purpose, that is, to identify the perceived service quality of public transport modes (Hensher 2015). This index is modelled by combining stated preference data and revealed preference data. When applied to Sydney's bus operators, this model revealed that customers' attitudes play an important role to set the appropriate benchmarks for operator performance to be included in contracts (Hensher 2015).

Bus service performance benchmarking is carried out to ensure that operators' performance is adequate (Kavanagh 2016). Benchmarking bus service operators involves measuring customer satisfaction by means of key performance indicators (KPIs) (Randall et al. 2007, Trompet et al. 2013). KPIs guarantee the pressure of competition and ensure that performance is efficient (Kavanagh 2016).

## 2.10 Factors that influence bus use

Apart from service quality, there are other factors that influence bus use. Table 2.4 summarises these factors, which are grouped under four themes of demographic, socio-economic, geographic, and other. It should be noted that the literature related to these themes derives from Westernised, developed countries.

Table 2.4 Factors that influence bus use

| Demographic | Socio-Economic | Geographic | Other |
|---|---|---|---|
| age, gender | income, car ownership, car availability, driver's license, travel expenditure | location, settlement size, density, land use characteristics | parking, policy integration |

Source: Adapted from Stead et al. 2000, Balcombe et al. 2004 and Stradling et al. 2007.

### 2.10.1 Demographic variables

*Age*

Frequency of bus use is associated with age (Palma & Rochat 2000, Stradling et al. 2007). People under 17 years old and senior citizens are more likely to use the bus (Enoch et al. 2003, Goodwin & Lyons 2010). Unless children are not chauffeured around by their parents, or walk and cycle, they use the bus (Zwerts et al. 2010). Regarding elderly people, age-related circumstances, such as problems with eyesight, make elderly persons highly dependent on public transport (Whelan et al. 2006).

*Gender*

Compared to men, women are more dependent on bus use (Simma & Axhausen 2001, Enoch et al. 2003). Females are often associated with non-car drivers who support car restrictive measures (Bonsall et al. 2005). Other reasons related to female use of the bus include psychological aspects. For example, females process more information and engage in effortful elaboration to obtain information (Beale & Bonsall 2007). Another characteristic of females is that they travel shorter distances than men do; hence, potentially they use the bus more. Having young children also limits females to using the bus, because mothers travel less (Axisa et al. 2012, McQuaid & Chen 2012).

### 2.10.2 Socio-Economic Variables

*Income*

People who have a low income are more likely to use public transport, including the bus (Balcombe et al. 2004). This is because low income people have higher elasticities for short trips, meaning that they would be more lenient towards slow modes of travel, such as the bus, when compared to the car (Balcombe et al. 2004). Moreover, buses are generally associated with low fares compared to other modes of public transport, thus attracting people on a low-income (Beirão & Sarsfield Cabral 2007). While low fares attract patronage (Paulley et al. 2006), concessionary fares also attract low-income households (White 1999, Lucas et al. 2010).

*Car use*

In the context of this research, the car is the main competitor of bus use. Associated with income is car ownership; indeed, the two factors are highly correlated, that is, the higher a person's income, the more likely it is they will own a car (Dargay & Gately 1999 and Dargay et al. 2007). Concurrently, car ownership is associated with car commuting (Stead et al. 2000).

Car availability is different from car ownership. In a household, it is possible to have more than one adult who has a driver's license (Buehler 2011), but there is only one car available. Hence, if one adult uses the car, the other adult is left without a car (Titheridge & Hall 2006).

In addition, higher travel expenditures are often associated with faster modes of travel and with higher quality services, such as taxis instead of buses (Balcombe et al. 2004). Hence, higher travel expenditures are not linked with bus use.

### 2.10.3 Geographic variables

Settlement size affects the location of jobs and services, which may influence the range of public transport services that can be provided on site (Stead et al. 2000). When settlements grow in size and lead to suburbanisation, the tendency is to shift away from public transport and towards car use (Schwanen et al. 2001).

Conversely, higher population densities generally lead to more public transport use (Handy 1996), as higher population densities are characterised by short travelling distances for employment and other opportunities (Stead et al. 2000).

### 2.10.4 Other variables

*Parking*

Parking that is available free of charge or at a minimal cost encourages car use and acts as a disincentive to bus use (Stead et al. 2000). Moreover, with car parking, evasion tends to be high, and strict enforcement is required (Balcombe et al. 2004).

*Policy integration*

Associated with parking but going beyond this issue is policy integration. Controlling and charging for parking is one measure of integrating transport policy to help increase the factors that influence bus use (Balcombe et al. 2004).

Another example of transport policy integration includes congestion charging (Anable et al. 2004). In this case, car users would need to pay a fee to access a designated area, thus encouraging them to reduce car use and shift to public transport (Davison & Knowles 2006). One such policy example is the congestion charge in London (Hickman et al. 2013). At the same time, increasing bus priority schemes contributes to increasing the potential for reducing bus travel times (Balcombe et al. 2004).

Concurrent with deterrents of car use, it is necessary to introduce and support attractive alternative transport choices (Anable et al. 2004). For instance, introducing green travel

plans for employers would encourage commuters to use alternative modes of transport, including the bus (Hensher 1998, Enoch & Zhang 2008, Enoch 2012).

## 2.11 Behaviour and bus use

Transport research on behaviour generally takes different streams; there are two prominent ones. The first one is related to mode choice as identified through activity-based modelling that is dependent on travel demand (e.g., Bhat & Koppelman 2003, Buliung & Kanaroglou 2007, Shiftan 2008, Bifulco et al. 2010). The second stream focuses on social-psychology models (e.g., Anable 2005, Bamberg & Schmidt 2010, Ben-Elia & Ettema 2011). Another stream that is also considered, but on a more limited extent than social-psychology is the sociological perspective (Shove 2010).

The main differences between the social-psychology and sociological approaches is that the former focuses on only the individual rather than the social practices (Howell 2012). With the sociological perspective, it is argued that consumers, such as bus users, should be targeted to change social practices rather than individual practices (Hand et al. 2005). Understanding social change helps in understanding how practices evolve, and helps in targeting activities that society considers as normal and resists associated changes (Shove 2010). Social change is heterogeneous when compared to social-psychology, and the former focuses on societal transformation (Shove 2010).

For the purpose of this study the sociological approach is not ideal. This research targets a bus reform, and its impacts on behaviour and policy. To understand a societal transformation of reduced bus use and increased car use a researcher would need to study the societal changes of earlier decades that led to the reform. Furthermore, social change requires fundamental transformations to political, economic, and social systems (Alvord et al. 2004). It is not the aim of this research to implement social changes, but to understand the impacts of bus reform on behaviour and policy.

Schwanen et al. (2012) support the use of the socio-psychological approach. They argue that behaviour-related studies that are inspired by social-pyschology models are fairly easily translated into policy interventions. This reasoning is applicable for this research, which centres on the Malta bus reform, a policy intervention. The main aim of this policy intervention was to instil behaviour change from car use to bus use. Consequently, the theoretical framework here is based on models of social-psychology.

Models of social-psychology focus on influencing travel behaviour, and there is a variety of such models (Shove 2010). Two perspectives are related to decisions that influence travel behaviour: the result of rational decisions (Bamberg et al. 2007, Strambach & Doring 2012) and the result of habit, which is defined as automatic behaviour (Verplanken et al. 1997). When referring to travel behaviour-related decisions using the former perspective, the TPB (Ajzen, 1991) is often used, since it is considered a rational utility theory (Strambach & Doring 2012). The second perspective is associated with other theories, such as the Theory of Interpersonal Behaviour (TIB) (Triandis 1977). In the TIB, intentions are formed by social factors and emotions that depend on past behaviour, hence influencing habits (Triandis 1977).

The most common model of social-psychology applied in travel behaviour research is Ajzen's (1991) Theory of Planned Behaviour (TPB) (Lyons et al. 2008). It has been applied independently (e.g., Anable 2005, Bamberg & Schmidt 2010), in combination with other theories (e.g., Bamberg et al. 2011, Klöckner & Friedrichsmeier 2011), and versions of it have been modified and extended (e.g., Parker et al. 1995, Heath & Gifford 2002). One of the weaknesses of the TPB in the context of this research is that this model focuses on behaviour only, it does not look into behaviour change.

Behaviour change is referred to in the emerging concept of the Capability, Opportunity, Motivation and Behaviour Model (COM-B) (Michie et al. 2011). So far, the two known published transport-related studies that specifically refer to the COM-B model are on the use of technologies for sustainable transport (Wells & Pangbourne 2016) and an evaluation literature related to behavioural interventions to reduce car use, hence changing behaviour (Arnott et al. 2014). The following sub-sections look at both models in more detail.

### 2.11.1 The Theory of Planned Behaviour (TPB)

The TPB (Ajzen 1985 and Ajzen 1991) derives from the Theory of Reasoned Action (TRA) (Fishbein & Ajzen 1980). The TRA states, “The intention to perform a behaviour is a function of attitudes toward engaging in the behaviour and perceived normative pressure to perform the behaviour” (Fishbein & Ajzen 1980).

The TRA is based on the assumption that behaviour occurs under volitional control, that is, a person is aware of the intended behaviour. The TPB was developed on the basis

that intention might not always lead to behaviour because the latter might be influenced by obstructions, such as personal deficiencies and external obstacles (Ajzen, 1985). Intention remains a central prerequisite to perform a given behaviour because it is assumed to capture motivational features that influence behaviour (Ajzen, 1991). The additional factor in the TPB is PBC (Ajzen, 1991). This means that behaviour is successful if a person who intends to do a behaviour has "sufficient control over internal and external factors which […] influence attainment of the behavioural goal" (Ajzen, 1985, p. 36).

The TPB is composed of links between PBC and attitudes towards the behaviour and their relation with the subjective norm. These three are each linked with intention, which then influences behaviour (Ajzen 1991). As shown in Figure 2.1, apart from intention, only PBC can be directly linked with behaviour (Ajzen, 1991). As Ajzen (1991) stated, however, the intention to do the behaviour does not always mean that the behaviour is implemented. Each component in Figure 2.1 is defined by Ajzen (2006a) as follows:

*Attitude towards a behaviour*: the degree to which performance of the behaviour is positively or negatively valued

*Subjective norm*: the perception of an individual regarding social pressure to engage or not in a behaviour

*Perceived behavioural control*: people's perceptions of their ability to perform a given behaviour.

*Intention*: an indication of a person's readiness to perform a given behaviour, which is considered the immediate antecedent of behaviour

*Behaviour*: the manifest, observable response in a given situation with respect to a given target

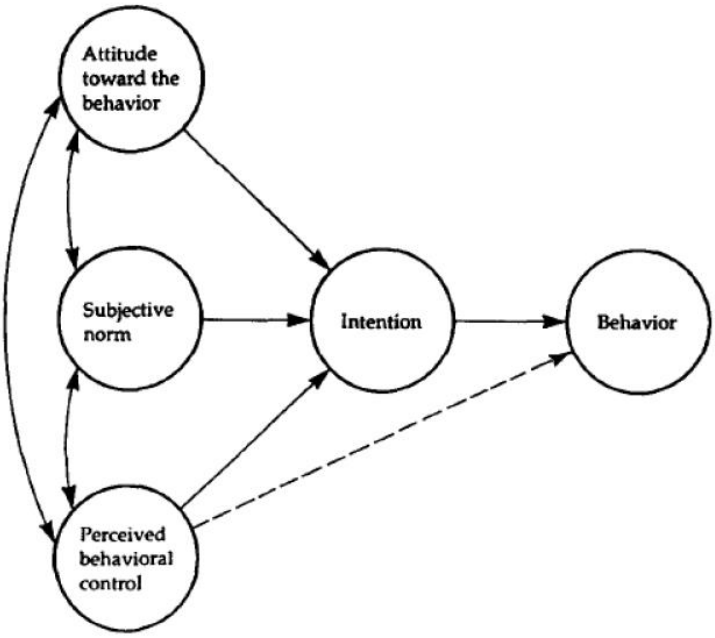


Figure 2.1 The Theory of Planned Behaviour (Ajzen, 1991)

*Criticism of the TPB (Theory of Planned Behaviour)*

As a well-established model, the TPB has been modified and adapted several times. In some instances, extensions and modifications have been carried out because the model lacked particular variables, as happened in Anable's (2005) work.

The main criticism of the TPB is that it is self-reported. This means that results are not objective, because individual participants report their views in relation to listed factors, such as attitudes and intentions (Armitage & Conner 2001, Van Acker et al. 2010).

One of the factors Anable (2005) added to the TPB was habit. Habits can lead to unreasoned behaviour, as if habits are strong, the relationship between attitude and behaviour can be weak (Van Acker et al. 2010).

Another issue is that Ajzen (1991) considered PBC as interchangeable with self-efficacy. The latter is defined as the perceived personal belief about what can be achieved (Anable 2005) whereas PBC is more general and includes external factors that influence behaviour (Armitage & Conner 2001).

Finally, not all factors are easily measured. For instance, intentions can be measured in a number of different ways, including self-predictions (Armitage & Conner 2001). In

line with this argument is the difficulty to measure PBC. In some instances, when intentions or self-predictions are strong, these might be conflicting with PBC (Armitage & Conner 2001).

### 2.11.2 The Capability Opportunity Motivation – Behaviour (COM-B) Model

Earlier versions of this model have been in place since the 1950s. It was used to explore cognitive behaviour in children (Lewin 1951); for social work, to determine whether clients changed their behaviour once help was provided (Ripple 1955); for consumer behaviour (Olander & Thogersen 1995); for crime prevention (Felson et al. 1998); for social marketing (Rotschild 1999); and, recently, in health research (Michie et al. 2011). The interdisciplinary use of this concept has often led to a change in terms; for instance, 'capability' is referred to as 'ability' or 'capacity'.

The concept of the COM-B model is a framework for understanding behaviour (Figure 2.2). It involves the interactions between capability, opportunity, and motivation, specifically at times when interventions for behaviour change are established (Michie et al. 2011). The following are the definitions for each component as provided by Michie et al. (2011):

*Capability*: the individual's psychological and physical capacity to engage in the activity concerned, including having necessary knowledge and skills

*Motivation*: involving all those brain processes that energise and direct behaviour, it includes habitual processes, emotional responding, and analytical decision making

*Opportunity*: all the factors that lie outside the individual and that make the behaviour possible or prompt it.

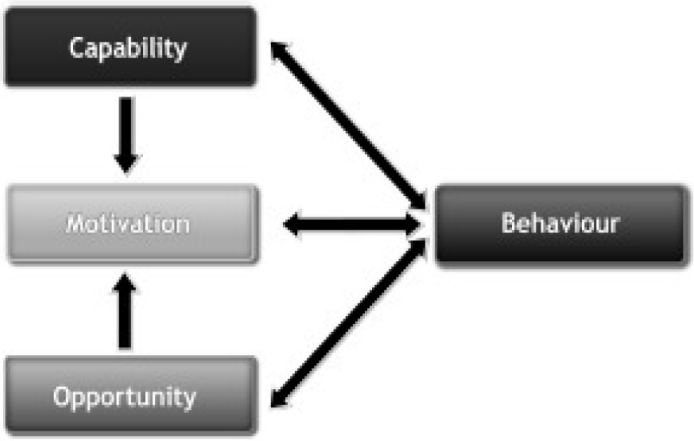


Figure 2.2 The COM-B Model (Michie et al. 2011)

*Criticism of the COM-B Model (Capability Opportunity Motivation – Behaviour Model)*

The paper that presented the COM-B model mentions three limitations (Michie et al. 2011), as the researchers acknowledge that they might have unintentionally marginalised some intervention functions and frameworks. Thus, the COM-B model might not be complete, and there is no guarantee that the judgements done to identify the frameworks for the COM-B model are optimal. Consequently, the model might not be useful in certain circumstances. Finally, the Behaviour Change Wheel (Figure 2.3), which has the COM-B model at its core, may be difficult to use (Michie et al. 2011).

There is a lack of literature regarding the COM-B model; hence, criticisms of the model based on applications are quite restrained. However, an interview with Professor Michie indirectly revealed the main limitations of the model (Perry 2013). First, the model could be criticised as reporting subjective experiences, as did Armitage and Conner (2001) with the TPB. However, Professor Michie argued that it is important to distinguish subjective experiences from people's actual experiences (Perry 2013). The actual and subjective experiences are personal perceptions, which influence the general sentiment of the individual (Moneta & Csikszentmihalyi 1996). Collectively, these evolve into people's attitudes and beliefs, which through group identification, become collective behaviour (Perry 2013).

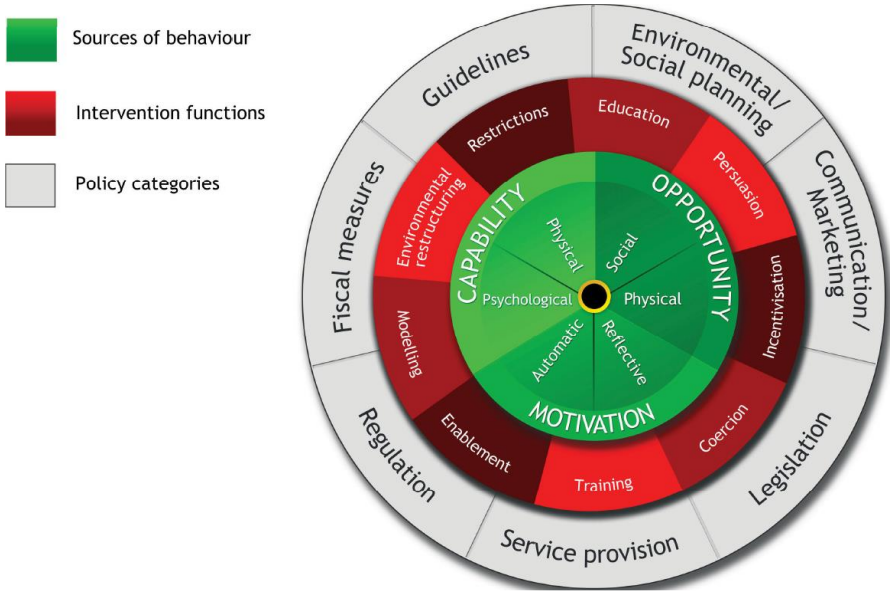


Figure 2.3 The Behaviour Change Wheel (Michie et al. 2011)

## 2.12 Gaps in the Literature

The literature review is developed in accordance with three main themes: bus reforms, bus policy and institutions, and behaviour change theory regarding bus use. To date, no particular study has combined these three themes and examined the topic to the same level of depth that is done in this research, even more in the context of a bus service reform.

The Maltese case study provided the opportunity to look at the three areas of bus reform, policy and institutions, and behaviour change in a concrete, comprehensive way. This study shows in detail the complexities involved in the reform process. The Maltese case study can be used to derive lessons that can be applied in similar contexts, for instance, in car-oriented societies or in cities the size of Malta.

### 2.12.1 Revealing the complexity of bus reforms

As has been explored in this chapter, much of the literature has looked at bus reform (refer to Table 2.1 for examples), but none has looked at the complexity involved in a reform as has been done in this research. This complexity involves combining behaviour with policy and institutions.

To achieve this aim, this research includes tourists as stakeholders, together with Maltese residents. Previously, tourists have not been considered as stakeholders in a behaviour change context of a bus reform. In fact, there is a lack of literature regarding tourists and bus use.

Behaviour includes the various levels of interactions involved when deciding which mode of transport to use. To date, bus reform studies have not referred to combined and adapted models from social-psychology to understand the complexities of behaviour involved, as has been done in this research.

Another two components that are involved in the complexity of a bus reform and that emerge from this research are policies and institutions. The novelty here is in the method of analysis used; Bardach's (2012) evaluative criteria are used to analyse the relevant policy documents, and the Institutional Analytical Development Framework approach (Kiser & Ostrom 1982) is used to analyse institutions involved in the decision-making process of the reform.

### 2.12.2 Behaviours

A missing aspect observed in the literature is that the processes that lead to bus reform, such as market structures and operational processes, do not consider strongly behavioural components. There is a disjoint in the literature between what influences stakeholders in terms of behaviour and the development of market structures and operational processes.

The proposed conceptual model is designed to show that behavioural components can be included in the design stage of bus reforms and during their operational stages. In this way, the inclusion of all stakeholders is enhanced at all levels, not only when they use the bus service as consumers.

### 2.12.3 Stakeholders

Stakeholders include the consumers and potential consumers. The latter group are particularly important because the reform was intended to change behaviour and achieve patronage increase. In this case, these groups include Maltese residents and tourists to Malta. Generally, research focuses on the bus users who are residents, but

tourists are important stakeholders in this case, especially because the Maltese economy depends on tourism.

Other stakeholders include the 'actors', that is, the people working with the institutions and the operator. The latter includes bus drivers. This group are key for a bus service, but are not given the necessary importance in literature. In fact, there is a lack of literature that considers bus drivers in a bus service reform context. Furthermore, understanding the opinions of policy-makers and planners that were involved in the reform process and eventual outcome provides additional knowledge to literature in a bus reform context.

### 2.12.4 The Role of Politics

The literature has shown that for reforms to be implemented, political will is a key component (e.g., Pienaar et al. 2005, Muñoz et al. 2008, Ashmore & Mellor 2010). What seems to need further coverage in the literature, however, is how politics may act as a barrier for success, such as in the case of regulatory capture (Walters et al. 2000) or a lack of interest from politicians (Muñoz & Gschwender 2008). This research contributes more to the literature regarding this concept.

### 2.12.5 Analytical Methods

The novel analytical methods involved in this research refer to the policy and institutional parts of the complexity of a bus reform. In the literature, transport policy is analysed through its implementation (e.g., De Witte et al. 2008), or how policy can be transferred to other cases (e.g., Marsden & Stead 2011). It is uncommon, however, to analyse the actual policy documents. This research includes a set of evaluative criteria (Bardach 2012) to analyse the relevant policy documents. This method of analysis gives insight to the policy as it is written and therefore, promised, and not as it is implemented.

The other novel method of analysis in bus reform research is the IAD Framework approach (Kiser & Ostrom 1982). This method of analysis is useful because it targets institutions specifically, and considers human behaviour, which adds to the complexity of bus reform.

As discussed in section 2.7.3, discourse analysis has been used in transport research, but only to a limited extent. This research adds further to knowledge about discourse analysis in transport by applying it to a bus reform context, and by using the Foucauldian approach, which is different from what is generally done in discourse analysis. This new approach will highlight the context of power, because the reform is a change that was imposed by the government.

Chapter 3, the following chapter, illustrates and explains the proposed conceptual model. This proposed model is defined in the context of this research and case study, namely, the Malta bus reform. This research proceeds by using the proposed conceptual model as an application to identify the impacts of bus reform on behaviour and policy.

# Chapter 3 The Proposed Conceptual Model

As discussed in Chapter 2, section 2.11, policy interventions are better studied through social-psychology (Schwanen et al. 2012) to understand comprehensively the different layers of behaviour interactions involved. The proposed conceptual model combines the TPB (Ajzen 1991) and the COM-B model (Michie et al. 2011). Both models seek to disentangle the complex interactions of behaviour, and this is why these two models were chosen for this research.

## 3.1 Applications of the Theory of Planned Behaviour in Transport

When applying the TPB (Ajzen, 1991), researchers include additional factors to the original model, because it lacks factors such as personal norms, habit, past behaviour, and self-efficacy (Jopson 2004). Anable (2005) added five factors to the TPB: moral norm (personal obligation or commitment to contribute to the preservation of the environment), environmental attitudes, worldview and knowledge (it is expected that moral norms develop from these two factors), efficacy (perceived belief about what can be achieved), identity, and habit (automatic behaviour and actions).

She discovered that PBC is important and that attitudes define personal characteristics (Anable 2005). Therefore, different people may have the same attitudes, but these attitudes may result in different behaviours, or they may have different attitudes, but demonstrate the same behaviours.

The added factors may depend on the researcher's perspective of the definition in the research context. Habit, for instance, as discussed earlier, may be considered important when viewed through a different model (Verplanken et al. 1997), but in other instances, it is embedded in the rational approach, as in Anable's (2005) case. Another example is the use of 'efficacy'; for Ajzen (1991), this is synonymous with PBC whereas Anable (2005) uses it separately, as a perceived belief. Armitage and Conner (2001) argued that

efficacy is the intention to engage in behaviours that people feel they are capable of doing, in contrast to the perception of the ability to do something. Hence, factors are added and adapted to models according to the needs identified by the researchers.

Bamberg et al. (2011) focused their research on car users' decision making and applied a combination of the TPB (Ajzen, 1991) and the Norm Activation Model (NAM) (Schwartz 1977). The reason for combining the models is that the TPB is described as having social norms, which are interpreted as perceived social pressure, and the NAM is referred to in the case when reduction in car use is in favour of pro-social motives (Bamberg et al. 2011). Their research regarded the reduction of car use and the use of more personalised travel planning. They found that it is necessary to go through transitory stages of intention, including goal intention and behavioural intention, and then choose the best option as an alternative to the car. Additionally, they argued that car users who have formed their intention may find it easier to implement the behaviour of using alternative modes of transport (Bamberg et al. 2011).

The TPB and the NAM were combined in another study, by Klöckner and Friedrichsmeier (2011), which focused on the decision to use the car as opposed to alternative travel modes. They combined both models because they believed that there is a distinction between indirect person-specific aspects (PBC) and direct aspects. The factors included personal norms (determined by awareness of need and awareness of consequences), social norms, and PBC (Klockner & Friedrichsmeier 2011). As an example of a direct situation that influences mode choice, they used the examples of disruption in public transport networks, such as strikes or the cancellation of services. They argued that a two-level approach to mode choice includes person specific and situation-specific variables. Additionally, they claimed that personal norms have a negative influence on intention (Klockner & Friedrichsmeier 2011).

The TPB (Ajzen 1991) has also been combined with the Technology Acceptance Model (TAM) (Davis 1989). The TAM portrays a predictive power with regard to technology use. The TPB and the TAM were combined with habit to examine switching intentions towards public transport by private vehicle users (Chen & Chao 2011). When studying the introduction of a mass rapid transit system in an urban area in Taiwan, Chen and

Chao (2011) concluded that the subjective norm is the most influential variable of the TPB and that the habitual behaviour of private vehicle use hinders an individual's intention to switch from car use to public transport.

Studies that include attitude and behaviour change theory focus mostly on the change from car use to alternative modes of transport. Attitude studies that are specifically related to bus use were explored in Heath and Gifford's (2002) research, using an extension of the TPB to examine bus ridership amongst university students. Heath and Gifford (2002) claimed that the TPB predicted accurately the use of public transport by students, and when a descriptive norm was added (which is described as what is typically done) together with the interaction between intention and PBC, the prediction of bus use improved significantly (Heath & Gifford 2002).

Research shows that intention plays a major role in influencing behaviour, since this variable is often found linking attitude and behaviour. Consequently, Gärling et al. (1998) raised the question regarding attitude and its role in predicting intention, and the role of intention in predicting behaviour. In doing so, they referred to the TPB and the Theory of Trying (Bagozzi 1992). The latter adapts the TPB by introducing cognitive and emotional self-regulatory mechanisms, resulting in the attitude-desire-intention model. They further stated that desire to implement a behaviour precedes intention, which is then planned, and this results in an increased consistency between intention and behaviour (Gärling et al. 1998). Their research was based in Sweden and was focused on two methodological experiments related to planned trips as opposed to habitual trips. Planned trips were linked with actual travelling, but this depended largely on the trip type, such as leisure trips.

Overall, the literature shows that intention seems to be the factor that is linked to behaviour. For the purpose of this study, intention is assumed to be a critical factor that can influence behaviour.

## 3.2 Application of similar concepts of the COM-B Model in Transport

The interaction between capability, opportunity, and motivation, and their influence on behaviour, has been analysed in travel behaviour research, but not specifically through

the COM-B model. In fact, capability, opportunity, motivation, and behaviour have been applied in two approaches. One approach is the Triade Model (Poiesz 1999), which provides an index of behaviour. The second approach is Thøgersen's (2009) model, which combines capability, opportunity, motivation, and behaviour with the TPB (Ajzen, 1991). The application in the latter model was public transport users as consumers.

The Triade Model (Poiesz 1999) is composed of the factors of motivation, capacity, and opportunity. In this model, it is assumed that for behaviour to take place, all three factors need to reach a minimum level of contribution simultaneously (Morel et al. 1997). Morel et al. (1997, p. 465) enhanced their assumption by stating: "The Triade model assumes a multiplicative relationship among the three determinants." The final outcome of the model is an individual's subjective assessment of the three factors (motivation, capacity, and opportunity), which determine whether a behaviour takes place (Morel et al. 1997).

The Triade Model was used by Vonk et al. (2010) to identify whether public transport customers would use a personal real time travel information application called InfoRio, and the case study was Rio de Janeiro, Brazil. Vonk et al. (2010) compared the model to the TPB, but argued that the main disadvantage of the latter is that every factor is interrelated. Hence, an overall outcome was provided, marginalising the complex interrelations that occur in between.

In her doctoral research, Bogers (2009) applied both the TPB (Ajzen, 1991) and the Triade Model (Poiesz, 1999) to identify route choice while driving. Her premise was that a traveller's capabilities (intelligence and memory), motivation (for making a route choice and related experiences, such as traffic congestion), and opportunity (to learn the route) influence day-to-day route choice. The similarities between both models were observed as having PBC as a combination of capacity and opportunity, whereas attitude and subjective norm were compared to motivation (Bogers 2009). In this manner, capacity and opportunity, and attitude and subjective norm are simplified into two factors, namely, PBC and motivation, respectively.

Thøgersen (2009) also applied the basic concepts of the COM-B model, which are also found in the model of Motivation, Opportunity, and Ability (MOA). He also combined the MOA model with the TPB, giving most importance to the PBC factor. According to Thøgersen (2009), ability and opportunity are not easily distinguishable; consequently, he considered them as forming part of the PBC factor.

Thøgersen (2009) used the combined MOA and TPB models to identify whether an intervention such as a free monthly travel card would change car owners' behaviour, so they start using the bus. The case study was based in Copenhagen, Denmark. Data were collected through structured interviews, and results were provided through structural equation modelling, which shows indices of the most prominent variables according to the scores given in the responses (Hair et al. 2014).

The research findings indicated that five months after the experiment took place, when the bus service was once again against a cost, seven percent of car drivers still used the bus (Thøgersen 2009). Thøgersen (2009) argued that based on this model, any form of intervention for behaviour change can be applied to induce bus use behaviour. The most important factor was PBC because according to Thøgersen (2009), it influenced the impact of price promotion. The limitation in this finding, however, is that for Thøgersen (2009), PBC was composed of ability and opportunity because the latter two are not easily distinguished. Hence, it was not clear which factor contributed to the behaviour change.

## 3.3 Applications of the COM-B model in Transport

Wells and Pangbourne (2016) combined behaviour theory with argumentation theory, focusing on computational argumentation, thus linking psychology with technology. The latter consisted of using Argument Markup Language (AML) and Argument Interchange Format (AIF), which created a dataset specifically called Sustainable Transport Communication (STC). The COM-B model was used to compare the linkages and overlaps between both theories to show that when supported by digital technology, behaviour change can be effective at a societal level (Wells & Pangbourne 2016). The findings revealed that individual behaviour change can be influenced through

technologies, but when the test is scaled up to a city or a nation, behaviour change interventions using technology become expensive (Wells & Pangbourne 2016).

A desktop study reviewed 15 research articles to identify the effectiveness of interventions to reduce car use (Arnott et al. 2014). The COM-B model (Michie et al. 2011) was used by Arnott et al. (2014) to test the said effectiveness of the interventions and categorise them. The study concluded that there is no evidence for the efficacy of existing behavioural interventions due to the diversity in the interventions applied in the various studies. They suggest that behavioural interventions should be investigated in high quality, controlled studies informed by existing evidence and theory, and the views of potential users (Arnott et al. 2014).

In a study to design the optimal bus service and forecast demand using a methodology based on stated and revealed preferences, Bourgeat (2015) concluded by suggesting that awareness is one of the steps in a behaviour change process. He suggested using the COM-B model (Michie et al. 2011) as a framework to identify barriers and identify points in favour of a change in behaviour and to create effective interventions (Bourgeat 2015). Bourgeat (2015) used walking to the bus stop as an example to promote behaviour change. Walking to the bus stop influences the capability and opportunity factors through the physical and psychological capability, and through the environment that limits the opportunity to use the bus, through easy access to cars parked on the street or in a garage. In addition, Bourgeat (2015) indicated that reframing the context of the transport mode choice to wellbeing rather than just transport needs would be more effective in achieving behaviour change amongst existing non-bus users.

## 3.4 The Combined and Adapted Model for this Research

As discussed in Chapter 2, section 2.11, this study focuses on attitudinal models rather than models of social change. In the concept of this research attitudinal models such as the Theory of Planned Behaviour (TPB) and the Capability Opportunity Motivation and Behaviour (COM-B) Model are better at identifying the impact that the bus reform had on behaviour. Such an approach allows to understand people's beliefs before and after the reform.

The TPB and the COM-B model were the two best possible models to combine compared to other models. The need to combine the two models derives from their similarity, as well as their complementarity. The models have similar factors; for instance, intention and motivation are used interchangeably. Regarding the other factors, however, attitudes, social norms, perceived confidence, capability, and opportunity have different meanings. For the purpose of this research, these factors need to be used separately.

As described in sub-section 2.11.2, the COM-B model is at the core of the Behaviour Change Wheel in Michie et al. (2011) because it is the framework for understanding behaviour. The Behaviour Change Wheel is specifically designed to plan interventions for behaviour change. However, as Michie et al. (2011) admitted, this wheel is difficult to implement, especially in a context similar to the Malta bus reform, where implementation was short-term.

Apart from the behaviour-related factors, the proposed conceptual model includes factors linked to behaviour change. These are the intervention for behaviour change itself, the bus reform, the behaviour, bus use, and policy.

Figure 3.1 illustrates the proposed conceptual model. This model is based on the government's main aim that the reform would lead to a modal shift from car use to bus use. Hence, the main assumption of the model in Figure 3.1 is that the intervention for behaviour change (the reform) could influence bus use.

The inner part of the model (Figure 3.1) has intention to use the bus at its core. Five factors link with intention; these are attitudes towards bus use, social norms, perceived confidence in using the bus, capability of using the bus, and opportunity to use the bus, while the factor of social norms is linked to attitudes and perceived confidence. All these factors are linked to bus use. These links could be psychological, as in attitudes, social norms, and perceived confidence, or physical, as in capability and opportunity. The outer part of the model includes the intervention for behaviour change – the bus reform is linked to the inner part of the model because the factors might change due to the intervention. Bus use links with policy, which is linked with the intervention for

behaviour change. However, policy can be changed depending on the outcome of the intervention, and it is influenced by institutional structures.

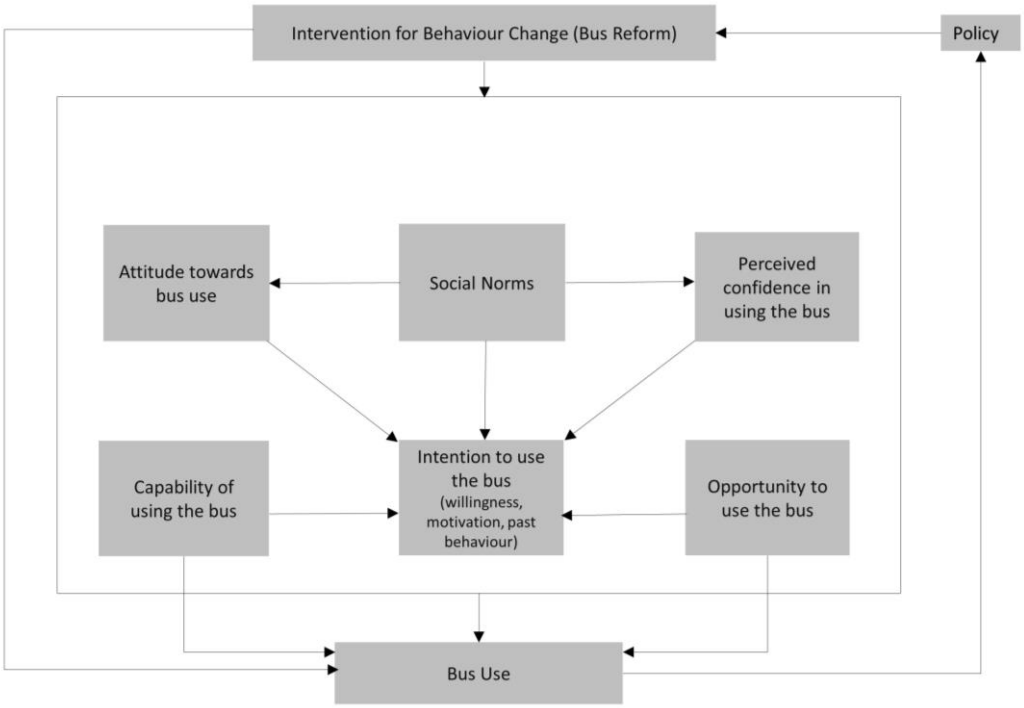


Figure 3.1 The Proposed Conceptual Model

### 3.4.1 Reasons for applying the TPB and the COM-B Model

To the knowledge of the researcher, the behaviour change models that will be used in this research, namely, the TPB (Ajzen 1991) and the COM-B model (Michie et al. 2011) have never been used together in the context of a bus service reform. This research uses these two models in this context. The advantage of combining the two models is that one model fills in any area that the other fails to cover. Whereas the TPB is social-psychology-oriented, the COM-B model is more physically oriented. These diverse characteristics of the two models contribute to offer a comprehensive understanding of behaviour.

The TPB is a well-established model while the COM-B model is relatively new. The two models were selected for this research because they share similarities in their framework. As discussed in sections 3.1 and 3.3, there is a consensus in the literature regarding the similarities between the TPB and the COM-B model. It seems that the COM-B model is associated with the TPB because the latter has more credibility due to

it having more applications in transport research. The discrepancy in research regarding the combination of the two models is how they are implemented, the research method used to find these relationships, and the context in which the research is applied. The two models are similar in that they have been described as self-reporting. As discussed in Chapter 2, sub-section 2.11.1, this feature may be considered a flaw. Professor Michie, however, argued that self-reporting is necessary to understand behaviour (Perry 2013).

The TPB has been reported to lack some variables in certain instances (e.g., Anable 2005). Michie et al. (2011) also mentioned that potentially the COM-B model might have this issue of lacking important variables. The reason for choosing these two models is that their concepts are similar and complement each other, hence for this research, what one model might miss is included in the other model.

In this research, each factor in the two models is considered separately. The advantage of considering this is that it is possible to identify how the impact of the reform specifically affects behaviour and policy. The literature shows that different factors (e.g., attitude - Anable 2005, and intention - Bamberg et al. 2011, and Chen and Chao 2011) of the TPB have different results depending on the context of the different studies. Hence, the rationale is that all the factors in both the TPB and COM-B should have the potential to influence behaviour. This means, for instance, that unlike in Thøgersen (2009), capacity and opportunity will be considered separately from PBC.

The factors that compose both models have the potential to influence behaviour because the behaviour can be measured by specific variables associated with each factor. This is unlike the assumption that, for instance, ability and opportunity are not measurable (Thøgersen 2009). Measuring the specific variables that compose the factors does not necessarily mean that all factors should have an equal impact on behaviour, as assumed by Vonk et al. (2010). Rather, the variables might have different levels of impact; thus, the factors that compose the model could have varying effects on behaviour.

## 3.5 Assumptions

The proposed conceptual model is based on a set of assumptions. To understand the model, it is important to consider these assumptions.

### 3.5.1 Available Modes of Transport Influence Behaviour

Malta has one of the highest numbers of passenger cars per inhabitant in Europe (Eurostat 2017b). The assumption is that car availability leads to more car use. This assumption is realistic because it is based on a statistical fact. This is even more so because the case study is based in a car-oriented society where owning a car is a status symbol, and obtaining a driver's license at the age of 18 is similar to a ritual. This assumption is meaningful for the factor 'bus use' in the conceptual model. Bus use here refers to the behaviour. The behaviour is assumed to be distinguished between three modes of transport, namely, car, bus, and other, with the main modes being the car and the bus.

### 3.5.2 The Intervention for Behaviour Change

The bus reform of the 3rd July 2011 was the intervention for behaviour change. The assumption is that this intervention affected behaviour and policy, and the factors and links chosen for the conceptual model are the best possible in the context of this research.

The literature shows that reform influences behaviour and policy. In London (White 1997), Adelaide (Bray & Wallis 2008), and Melbourne (Hensher & Stanley 2008b), for instance, patronage increased, which means that behavioural factors were influenced positively. Similarly, the case of Transantiago (Muñoz et al. 2013) supports the fact that reform affects policy because this had to change for the system to improve.

This assumption is important for this research because it supports the integrity of the conceptual model. The links indicate a circular model, which means continuity. Hence, the model implies that the intervention is not linear with a start and an end.

### 3.5.3 Rational Thinking

The intervention led people to think about their behaviour. The assumption is that because of a change, people become aware that they are making a decision. Hence, the behavioural factors, such as attitudes, intentions, and perceived confidence, are the result of a thought process.

As discussed in section 3.1, the literature shows that people think rationally when they form decisions about travel (Bamberg et al. 2007, Strambach & Doring 2012). This is especially the case when routine behaviour is eliminated because of an intervention that is introduced to change behaviour.

Therefore, this assumption implies that people make decisions after thinking about them. These decisions on behaviour are the result of the bus reform.

## 3.6 Interpretations of the conceptual model

The main component of the conceptual model is the intervention for behaviour change, which affects behaviour and policy. The following sub-sections explain the relationships that are involved in the model.

### 3.6.1 The intervention, bus use and policy

With the bus reform, the government's main aim was to create a modal shift from car use to bus use. The hypothetical positive interpretation of the conceptual model was that the intervention would increase bus use. An increase in patronage would mean that behavioural factors are influenced positively, hence the policy would be successful.

Bus use has two meanings. First, bus use refers to patronage amounts, as influenced by the intervention as a policy tool. Second, bus use refers to the use, potential use, or otherwise of the bus as influenced by attitudes, social norm, perceived confidence, capability and opportunity.

The rationale of the component 'policy' is that the policy process is complicated (Sabatier 1991). In this context, policy has three interpretations. It refers to the process involved to solve the problems associated with increased car use; hence, as a policy, the

bus reform was the intervention for behaviour change. It also refers to institutional structures and relevant documents that lead to the reform. Finally, this component refers to a policy change because whether bus use happens or not, the policy is adapted accordingly (Slack et al. 2017).

The intervention, bus use, and policy are linked in a circular flow on the outer part of the model. The intervention and bus use are also linked with the inner part of the model, which involves behaviour. The link in this case is an input output flow, which goes back into the circular flow of the outer layer.

### 3.6.2 Behaviour

The behavioural factors are linked linearly because of their relationship with bus use. As Figure 3.2 shows, some of the links that involve social norms can be bi-directional. These links are illustrated with a dotted line, because not all factors are measurable, or easily measurable, within this research timeframe.

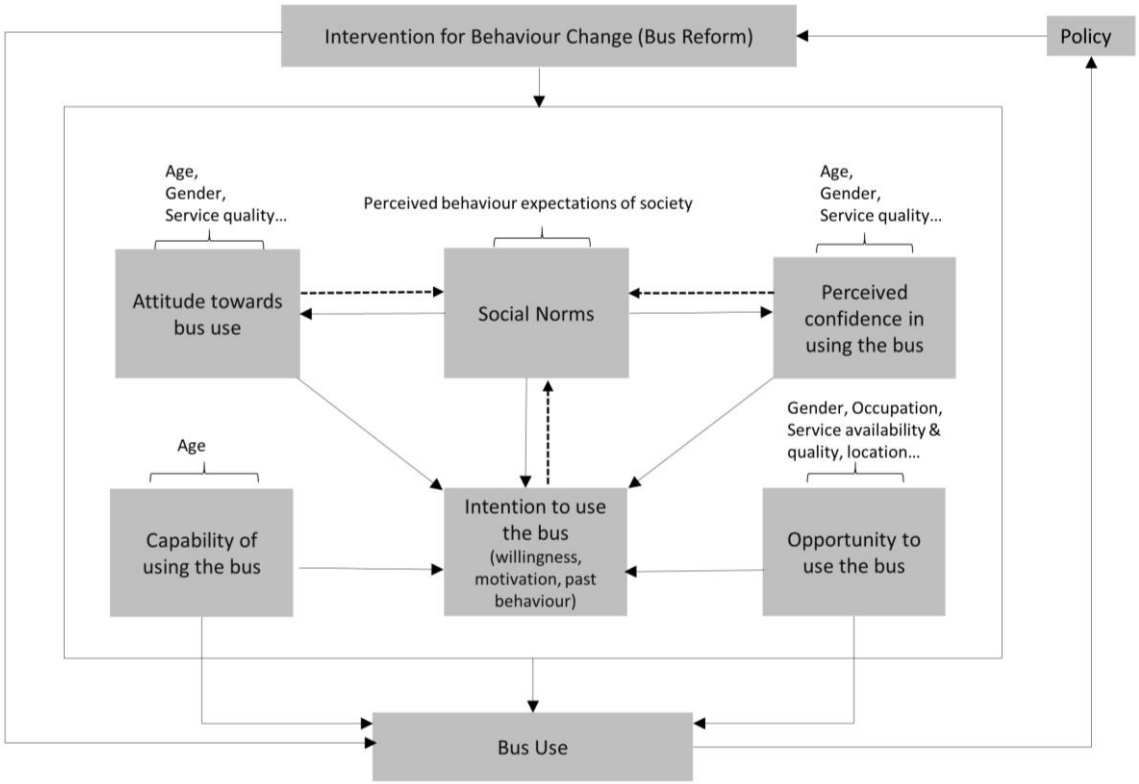


Figure 3.2 Detailed Conceptual Model

*Attitude*

Ajzen's (2006) definition of attitude towards a behaviour is the degree to which performance of the behaviour is positively or negatively valued. Attitudes involve an evaluation (Ajzen & Fishbein 2005), which apart from being positive or negative (Fazio & Williams 1986), can also be planned or spontaneous (Fazio & Williams 1986), and explicit or implicit (Eagly & Chaiken 2007). Hence, attitudes are rooted in deeper values of how people want to lead their lives and are important in influencing behaviour change (Goodwin & Lyons 2010, Wang & Chen 2012).

Sub-section 3.5.3 refers to the assumption of rationality, which is used to interpret the factor 'attitude towards bus use'. This rational aspect refers to the planned and explicit types of attitudes. Participants in this research are aware that they are self-reporting; consequently, they are conscious about the topic being asked and their evaluations of it. Hence, the participants' attitudes are influenced by prior knowledge and/or experiences.

*Perceived confidence in using the bus*

In the TPB (Theory of Planned Behaviour), Ajzen (1991) included the factor PBC, which is people's perceptions of their ability to perform a given behaviour (Ajzen 2006). An example of this is stating personal confidence in implementing a behaviour (Ajzen 1991). According to Ajzen (1991), PBC can influence behaviour in two ways: directly, known as Actual Behavioural Control (ABC), or through intention.

Regarding the decision between which modes to use, Bamberg and Schmidt (1999) identified that higher PBC of car use leads to more actual use of the car. Other studies concluded that bus use and PBC are linked to intention (Eriksson & Forward 2011, Anable 2005).

For the purpose of this research, PBC is referred to as perceived confidence. Hence, it is the personal confidence of either doing the behaviour, that is, using the bus, and the perceived confidence of having the intention of doing the behaviour. It is assumed that if a person perceives that he/she is able to perform the behaviour, then he/she is confident in doing it.

Perceived confidence can be implicitly influenced by mode use. In essence, perceived confidence is interpreted as the ability to use the bus and/or the ability to intend to use the bus based on evaluations of the bus service.

*Social Norms*

The TPB refers to subjective norms, which are the perception of an individual regarding social pressure to engage or not in a behaviour (Ajzen 1991). Heath and Gifford (2002) argued that there are two approaches to social norms. The first approach is social identity, through which individuals categorise themselves as part of a reference group (e.g., university students), and then identify strongly with this particular reference group (Heath & Gifford 2002).

The second approach is the broader notion of social norms. They are either subjective or descriptive (Cialdini et al. 1990). Both subjective and descriptive norms are strongly linked (Thøgersen 2008, Cialdini 2003). Subjective norms are beliefs about the approved ways of conduct, that is, what one ought to do. Descriptive norms are what is typical or normal, that is, what most people do: "If everyone is doing it, it must be a sensible thing to do" (Cialdini et al. 1990 p. 1015), which is not necessarily the case, because for example, if it is normal to see single car use that is bad practice as it contributes to traffic congestion.

Travel behaviour-change research identifies social norms as good predictors of intention to use either the bus or car, although different cases have varying conclusions (Heath & Gifford 2002, Chen & Chao 2011). Social norms, however, are usually not the main factor that influences intention. For instance, PBC seems to be stronger in determining intention (Anable 2005).

In Heath and Gifford's (2002) study on bus use amongst university students, descriptive norms (what is considered typical or normal behaviour) were the most significant predictors of bus use. Conversely, Chen and Chao (2011) claimed that subjective norms (what one ought to do) tend to influence behaviour. This claim derives from a Taiwanese study where car users expressed their intentions to switch to public transport.

Expectations are considered as good indicators of social norms (Bamberg et al. 2003, Bamberg & Schmidt 2003), as they reveal what people think is the normal thing to do, as in the approved way of conduct, and what people think is the most sensible to do because it is done by everyone.

This study adopts a middle ground approach to the interpretation of social norms. This approach considers that individuals identify themselves with specific groups (e.g., bus users), consider that what is typically done by these groups is the normal practice, and then behave in accordance with this view.

*Capability of using the bus*

In the COM-B model, capability is the individual's psychological and physical capacity to engage in the activity concerned, including having the necessary knowledge and skills (Michie et al. 2011). The limited transport-related research that included similarities of the COM-B model considered additional or complimentary factors.

In her study on route choice, Bogers (2009) stated that capability also included the power, skills, and tools to perform the behaviour, which were further defined as intelligence and memory while Vonk et al. (2010) included physical, mental, and financial capability. Similarly, from his research, Thøgersen (2009) identified that individuals can be constrained in using different types of modes of transport because of their capabilities.

Vonk et al. (2010) described capability as subjective; hence, its understanding depends on the researcher's perspective. As a person grows older, the physical ability to move is often reduced, and so their ability to travel is diminished (Schwanen & Páez 2010, Nordbakke 2013).

There are different aspects of capability, such as financial, mental, and physical. In the conceptual model, capability complements perceived confidence, because individual ability leads to perceived confidence. The interpretation of capability of using the bus is the individual's physical and mental ability to do so.

*Opportunity to use the bus*

Michie et al. (2011), in the COM-B model, refer to opportunity as all the factors that lie outside the individual that make the behaviour possible or prompt it. As they do for capability, Vonk et al. (2010) refer to opportunity as subjective. Therefore, definitions are adaptable to the research context.

Thøgersen (2006) argued that opportunities can have a direct effect on behaviour, stating that car owners have more opportunities than bus users because they have more mode options from which to choose. Additionally, cars, which in the context of this research are the main competitors of the bus, are a commodity that once used, quickly becomes a habit that it is difficult to change (Dargay & Hanly 2004). For example, in a decade-long panel study based on British households, only 8% of car drivers switched commuting mode from one year to the next (Dargay & Hanly 2004).

Stradling et al. (2007, p. 283) explained that opportunity is defined by answering the question "How can I make these journeys?" In the case of the bus reform, it is assumed that the bus reform made the bus service available (Chapter 2, section 2.8). Bogers (2009) considered that opportunity is influenced by time and circumstance, and in a bus service, time is a crucial factor that determines the reliability of the service provided (Wardman 2004).

Circumstances are the external factors that may influence the consumer (Vonk et al. 2010). External factors are composed of physical and social aspects (Michie et al. 2011). Physical aspects of opportunity include bus service quality characteristics, such as accessibility, time, and information. Apart from these characteristics, physical aspects in this research also include the walking distance to the bus stop (Biba et al. 2010), the perceived time taken to reach the destination (Wardman 2004), and the number of interchanges that a bus user has to make to reach the destination (Balcombe et al. 2004, Belter et al. 2009).

The social aspect, which influences income, refers to gender and occupation. For instance, women and people who have a low occupation status tend to use the bus more

(Schwanen 2011). In addition, as discussed in Chapter 2, sub-section 2.10.3, the location of jobs and services influences opportunities (Handy 1996, Stead et al. 2000). Since this study also considers tourists, their opportunities are considered to be influenced by their length of stay, accommodation type, and reason for visiting Malta (World Tourism Organization UNWTO 2012). Essentially, opportunities are interpreted as the physical and social aspects that make the behaviour possible.

*Intention to use the bus*

In the conceptual model, intention is the combining factor of behaviour while in the COM-B model, intention is replaced by motivation. Motivation is all those brain processes that energise and direct behaviour; it includes habitual processes, emotional responding, and analytical decision-making (Michie et al. 2011).

According to Ajzen (1991), motivation plays a role in influencing intention and behaviour. Ajzen (1991) argued that motivation leads to intention and he combines the two into 'intention'. Ajzen (2006) then referred to intention as an indication of a person's readiness to perform a given behaviour, which is considered the immediate antecedent of behaviour.

An intention is the willingness to conduct a particular behaviour (Steg 2005). In a study on decisions to use public transport modes other than the car, Bamberg et al. (2007) agreed with Ajzen's (1991) interpretation, and added that intention is the direct psychological determinant of behaviour; it is viewed as a combination of all the positive and negative evaluations a person considers when making rational decisions. Additionally, it is the result of motivation to implement the behaviour.

Two types of intention exist: goal and implementation (Gollwitzer 1990, 1993). Gollwitzer (1993 p. 142) distinguished between the two types of intention as follows: "I intend to achieve…" (the goal) and "I intend to initiate the goal directed behaviour" (the implementation). Hence, implementation intention is what leads to goals; it increases the consistency between intention and behaviour (Gollwitzer 1993). People fail to

implement intentions because intentions are unrealistic, weak (because people change their minds easily), and easily forgotten (Eagly & Chaiken 1993).

Rational planning is important for implementation intention (Eagly & Chaiken 1993). Planned intention was linked to behaviour in a longitudinal study among Chinese students that considered their mode choice after graduation (Zhu et al. 2012). As discussed in section 3.1, past behaviour has an influence on intentions when making planned decisions.

In this research, the interpretation of intention to use the bus includes both the goal and implementation aspects. The goal aspects lead directly to bus use, hence the direct link of intention to use the bus. This is supported by the literature as discussed in Chapter 2, sub-section 2.11.1. The implementation aspect refers to the planning and consideration required to have the intention to perform the behaviour, hence the link of intention with all the other factors in the proposed model. For this research, intention is interpreted as the willingness and motivation to perform a direct behaviour and the considerations involved to perform a behaviour.

## 3.7 Applying the Proposed Conceptual Model

The application of the proposed conceptual model is interpreted using the telescope metaphor (Cairney 2012), which makes it possible to analyse individual behaviours and to group those behaviour into segments of society.

As discussed in Chapter 2, sub-section 2.11.1, the literature shows that not all the factors in the models are easily measurable. In fact, in Figure 3.2, the element of social norms includes bi-directional linkages to attitudes, perceived confidence, and intention. The latter three factors might influence social norms, but measuring this link is difficult (hence the dotted line in the model). However, a longer-term study than this one would be required to explore this.

The difficulty in measuring social norms can arise because of the subjectivity of this factor. In this research, social norms are measured through the perceived behaviour expectations of society. This measurement is subjective, and is influenced by

perceptions and assumptions that are shaped by society and norms based on what is typically done and on what one ought to do.

Another issue regarding the applicability of the model is associated with the time involved in the data collection and the human resources available. More time availability can contribute to more data and to a greater number of diverse variables. An additional number of people involved in the data collection can dedicate tasks to collect different data simultaneously, for instance, collecting psychological information related to capability. In this case, since capability is interpreted by the physical and mental ability of using the bus, 'age' is considered the best possible variable that encompasses both aspects.

Attitudes towards bus use are measured through age, gender, and service quality. The literature shows that age and gender are associated with attitudes (e.g., Heath & Gifford 2002). Research done by Beirão and Sarsfield Cabral (2007), and dell'Olio et al. (2010, 2011) considers bus service quality when collecting information about attitudes. Hence, participants of different ages and gender will provide ratings for bus service quality characteristics.

Research also shows that car users tend to prefer to use the car (e.g., Merriman 2009, Cairns et al. 2014). Hence, it is implicit knowledge that mode use might influence the attitudes to bus use. Consequently, it is not included as a variable in Figure 3.2, but is used as a measurement for attitudes in the application of the model.

In the conceptual model, perceived confidence is interpreted as the ability to use the bus and/or the ability to intend to use the bus based on evaluations of the bus service. This means that perceived confidence will be measured on its own with mode use through the variables age, gender, and service quality, as well as with the intention to use the bus.

Intention is influenced by willingness, motivation, and past behaviour, that is, the experiences of using the bus. As described in sub-section 3.6.2, intention includes goal

and implementation intention, which involves a thought process. Thus, the participants were asked whether they considered using the bus.

Opportunity is interpreted as the social and physical aspects that make the behaviour possible. First, the social aspects are measured by gender and occupation. In Chapter 2, section 2.8, availability is not included in the service quality characteristics because it is assumed that the service was made available by the reform. Hence, in Figure 3.2, the reference to service availability is that it is implicit that the reform provided the opportunity to use the bus. Second, the physical aspects are measured through the relationships between social aspects, service quality, and the location of the participants. Opportunity is also measured through the perceived average time taken to reach destination, preferred walking distance to bus stop, and acceptable number of bus connections.

The tourist participants' occupation is replaced by length of stay, type of accommodation, and reason for visiting, as these factors are more relevant to this population sample in the host country.

Policy is measured through the relevant documents and institutional structures. Discourses by relevant stakeholders, including Maltese residents, tourists, and transport professionals, reveal aspects related to change in policy.

The next part of this dissertation is the Natural Experiment. It starts with Chapter 4, the case study, which sets out the research context, and this is followed by Chapter 5, the Research Methodology, which explains in detail the methods used for data collection and the analytical methods that are associated with the applications of the conceptual model.

# Part 2 Natural Experiment

# Chapter 4 The Case Study

As discussed in Chapter 2, section 2.3, reforms are unique policy tools because each case develops according to its context. These policy tools become lessons from which to learn (Preston 1999) because of their uniqueness, but also because of the shared similarities with other situations. Regarding the three contexts discussed in Chapter 2, section 2.3 geographical, cultural, and socio-economic, Malta is comparable to similar situations in this regard.

With regard to geographical context, the size of Malta, 316 km² (National Statistics Office 2014c) led the reform to take place on a national scale. Another bus reform that has been widely scrutinised in the literature is bus deregulation in England, even though at 151,012 km² (Office for National Statistics 2013), England is much larger in size than Malta. Nonetheless, Malta may offer lessons for other countries where nationwide reform can be implemented.

Furthermore, Malta is characterised by a physical boundary because it is an island. Therefore, this case study can be applied in similar situations that are constrained by boundaries, either as islands or in mountainous regions that lead to the 'islandness concept'. This concept refers to how islanders do their tasks in their confined spaces (Vannini & Taggart 2013).

A prominent feature of the cultural context is that Malta has a car-oriented society (Malta Environment and Planning Authority 2003). The car is the main rival of the bus service, and 18-year olds are pressured by their peers to get a driving license and a car (Malta Environment and Planning Authority 2003). Most bus reforms are implemented in urban environments that are car dependent (e.g., Transantiago, Seoul, Curitiba, and Bogotá). Thus, Malta's case provides further insight into that knowledge and develops further the social aspects of peer pressure. At the same time, the bus service has to cater

for the Maltese residents who are bus users, and for tourists, the majority of whom use the bus when they visit Malta.

Regarding the socio-economic context, Malta has a GDP per capita that is below the EU28 average (Eurostat 2016). This situation is comparable to countries such as Italy, Spain, the Czech Republic, Slovenia, and Cyprus (Eurostat 2016). Thus, Malta's case study can be used as a lesson for other countries that share the same level of economic health and standard of living.

## 4.1 Geographic Background

Malta is an archipelago of three islands, situated in the middle of the Mediterranean Sea. The mainland is Malta (247 km²), to the North of Malta is the smaller island of Gozo (66 km²), and in between lies Comino, which is only 3 km² (National Statistics Office 2014c). Thus, the total land area is 316 km² (National Statistics Office 2014c). Malta and Gozo house Malta's population, and Comino has one family and a hotel. The group of islands are collectively known as Malta, and daily activities occur mostly on the mainland (Figure 4.1).


Figure 4.1 The Maltese Archipelago

Malta lies 90 km south of Sicily, 300 km east of Tunis, and 350 km north of Libya (Pedley et al. 2002). It has the Mediterranean type of climate with mild winters and warm summers. The annual rainfall is around 479.6 mm (National Statistics Office 2014c), which classifies the island group as semi-arid (Azzopardi 1995).

In addition, Malta is characterised by high land to the west, and a low-lying eastern side that enjoys small sandy and rocky beaches (Schembri & Baldacchino 1992). This characteristic led to the formation of natural harbours, one of which is Malta's main port, the Grand Harbour (Schembri & Baldacchino 1992), which lies beneath the capital city, Valletta (Transport Malta 2017). This area is the main shipping industrial area in Malta.

Malta comprises six districts (Figure 4.2): the Northern Harbour, Southern Harbour, Northern, South Eastern, Western, and Gozo and Comino (National Statistics Office 2014c). Settlements are mainly located in the Northern Harbour and Southern Harbour districts, which together are known as the Grand Harbour Conurbation. The other districts enjoy more areas that are rural.

The geo-strategic position of Malta in the middle of the Mediterranean has led different colonies to leave their mark on the island, including the British in 1800 (Schembri 2000), who influenced the settlement spread in Malta (Schembri 2000). Malta gained Independence on the 21st September 1964 and became a Republic on the 13th December 1974, having been a British colony for nearly 200 years.

Most Maltese settlements have developed into a nucleated shape, with narrow, winding roads radiating out from the church at the core (Schembri 2000). In the Northern Harbour and Southern Harbour districts in particular, settlements sprawl into each other without physical boundaries. Thus, tourists would not know that they had accessed another settlement, unless they read the road signs. The main tourist accommodation areas are in the Northern Harbour District, in Sliema and St Julian's, and in the Northern District, in St Paul's Bay (Figure 4.3) (National Statistics Office 2016b).

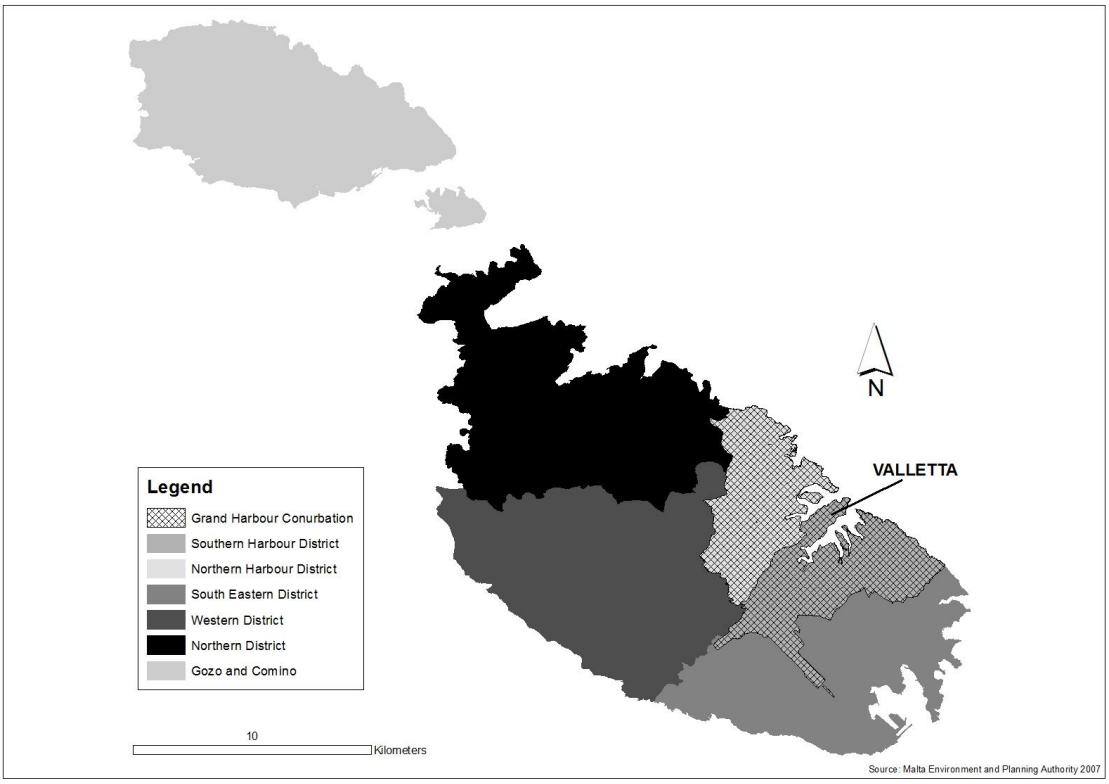


Figure 4.2 Malta's districts, the Grand Harbour Conurbation, and the capital city Valletta

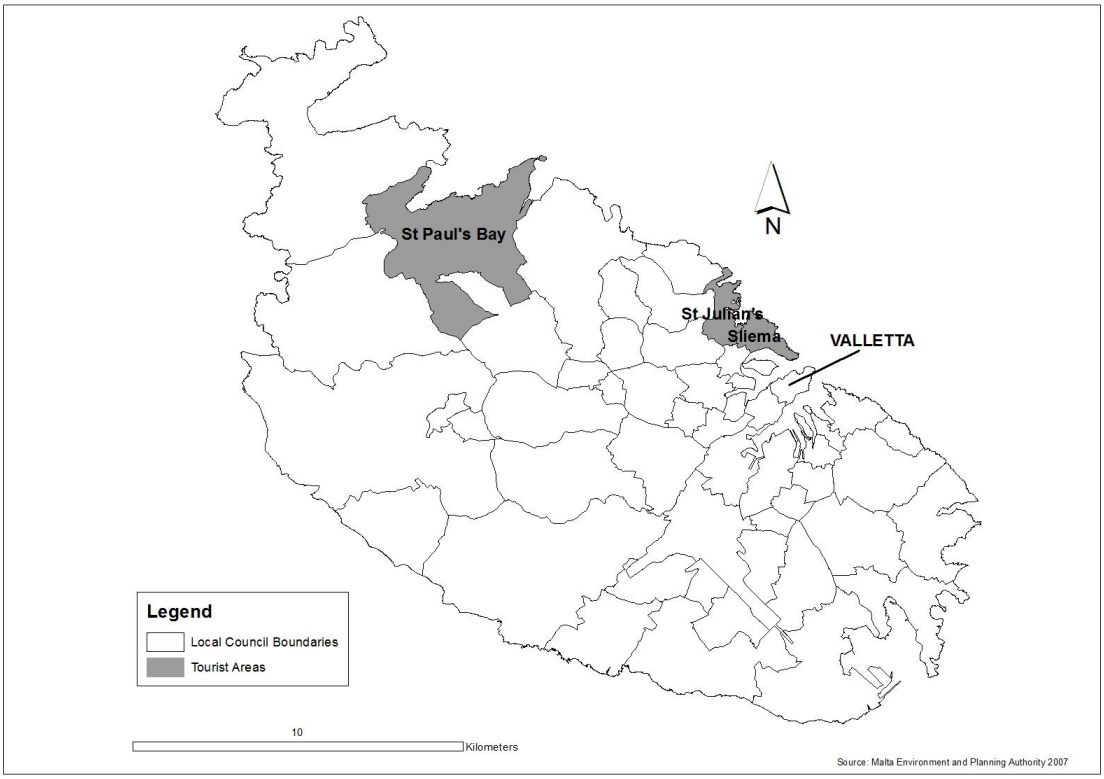


Figure 4.3 Tourist accommodation areas

## 4.2 Demographic Background

Malta's population was 434,403 at the end of December 2015 (National Statistics Office 2016b). Until 2010, the population in Malta was stable (National Statistics Office 2014c), but it rose afterwards as a result of immigrants rather than due to an increased birth rate (National Statistics Office 2016b). In fact, Malta has an aging population; the number of older people is growing slowly.

Gender is balanced in Malta; 50% of the population are male, and 50% are female (National Statistics Office 2016b). Figure 5.4 shows the age-sex structure of Malta for the year 2011, and the projected age-sex structures for 2020 and 2060. It can be seen that females have a longer life expectancy than males.

Malta's population density of 1,346 persons per km² (National Statistics Office 2014c) is the highest amongst the EU member states (National Statistics Office 2014a). The Northern Harbour (4,997 persons per km²) and Southern Harbour (3,026 persons per km²) districts are the two most densely populated districts in Malta (National Statistics Office 2014a).

## 4.3 Economic Background

In 2015, Malta recorded a GDP growth rate of 7.4% while in 2011, it was 1.4%. The GDP is forecasted to remain robust into 2018 (European Commission 2017). The main contributor to growth in private consumption is the services sector (National Statistics Office 2016b), namely, tourism; financial services; foreign trade; the manufacturing of electronics and textiles; pharmaceuticals; and online gaming (National Statistics Office 2014b).

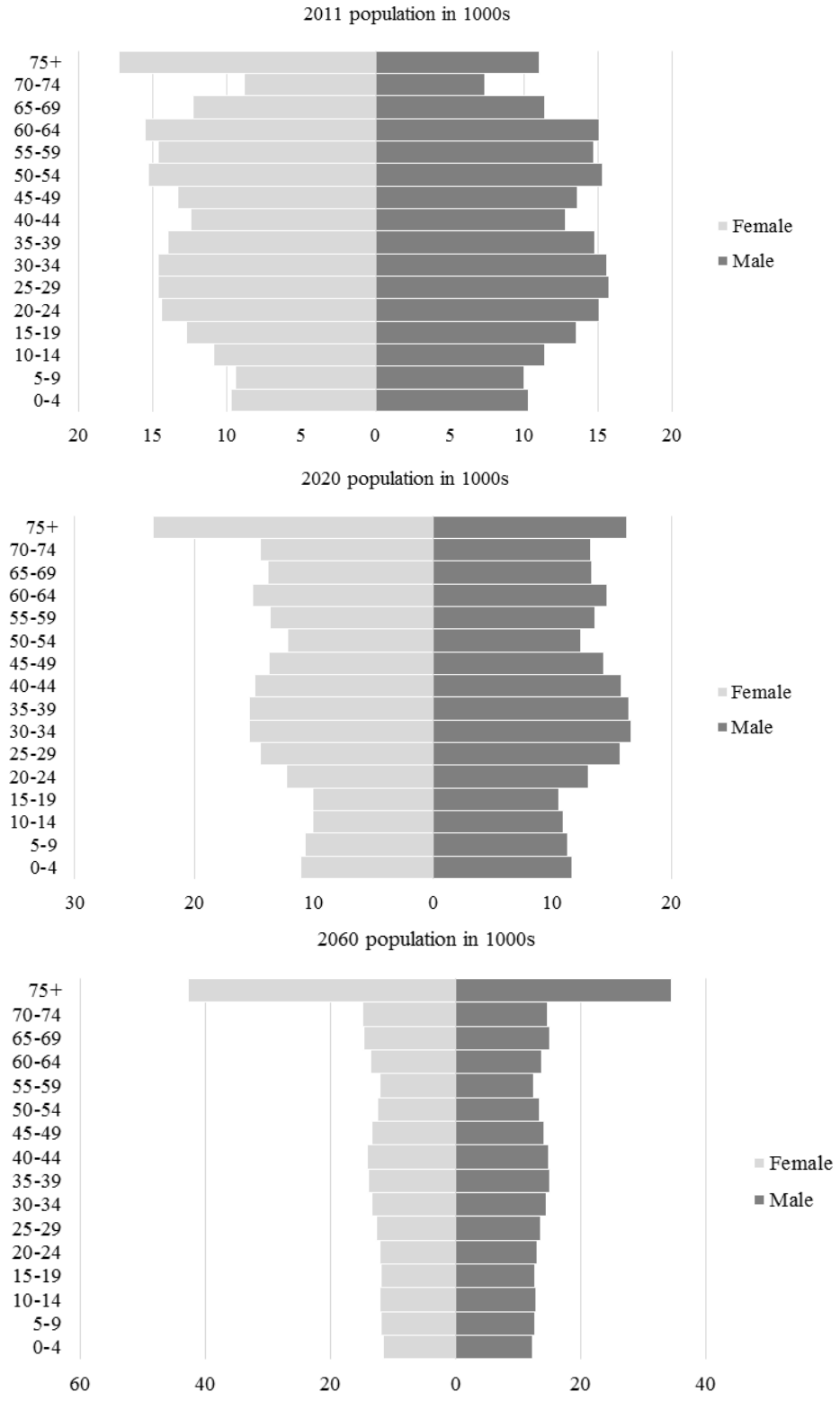


Figure 4.4 Age-Sex Structure for Malta – total population, 2011, 2020, 2060 (Adapted from: National Statistics Office 2016a)

### 4.3.1 A brief historic economic background

Malta's population is clustered in the Grand Harbour conurbation because of the economic history and low-lying eastern coast; most of the industrial activities were settled around the natural seaport (Schembri 2000), and it was and still is the main location of the marine industry in Malta.

Over the years, Valletta became the main administrative hub of Malta. Currently, several government departments and ministries are located on this peninsula at the heart of the Grand Harbour Conurbation (Azzopardi 1995).

With independence, the historic architecture and fortifications of Valletta and nearby settlements were used for economic reasons. The economy developed based on the touristic and recreational product, light-manufacturing industries, maritime services, and financial services (Schembri 2000).

### 4.3.2 Tourism

Out of 136 countries, Malta ranks 36$^{th}$ in the travel and tourism competitiveness index of 2017 (Crotti & Misrahi 2017); the tourist industry contributes 15% of the GDP, making it one of the countries most reliant on tourism (Crotti & Misrahi 2017).

In 2015, 1.7 million tourists visited Malta, while between 2001 and 2015, inbound tourists increased by 55.6% (National Statistics Office 2016b). On average, tourists stay 7.9 nights, and they choose accommodation in St Julian's, St Paul's Bay, and Sliema (Figure 4.3) (National Statistics Office 2016b).

### 4.3.3 Unemployment in Malta

Malta recorded one of the lowest rates of unemployment (4.5%) in the EU in December 2016, ranking in 4$^{th}$ place (Eurostat 2017a); the rate for the EU 28 is 8.2% (Eurostat 2017a). In the decade from 2005 and 2015, the employment rate increased by 10.4% for the economically independent age groups (between 20 and 64 years) (National Statistics Office 2016b). The male employment rate increased constantly by 1.7% over the decade, but the female employment rate increased by 18.8% (National Statistics Office

2016b). Between 2005 and 2015, the number of mothers who joined the labour force doubled (National Statistics Office 2016b).

### 4.3.4 Income inequality between genders

Despite the high increase in employment rate for females, income inequality between the genders is evident. In 2005, a male in his late 20s/early 30s earned €12,600 per annum and worked as a craft or trades worker. In the same year, a female worker of the same age group, with a secondary level of education, earned €11,900 per annum performing clerical work.

In 2015, a male worker in his late 20s/early 30s and who had a professional job earned €17,000. In the same year, females of the same age group with a tertiary level of education and employed in a professional occupation earned €15,700 (National Statistics Office 2016b).

### 4.3.5 Personal assets

In Malta, 77.7% of households are owner-occupiers of their home, and 31.4% of households own other forms of property, including second homes, garages, commercial premises, and agricultural land (National Statistics Office 2016b). The dwellings are 43% terraced houses, 26% maisonettes, 25% flats, 4% fully or semi-detached houses, and 2% other (National Statistics Office 2010). Given the small land area of Malta, land is an asset. In fact, 78% of households have a main residence and 31% have other real estate (Caruana & Pace 2013).

Despite the fact that land is an asset, household ownership ranks second to vehicle ownership. In fact, vehicles rank above households in terms of ownership; 85% of households owned one or more vehicles. Hence, vehicle ownership is considered the most important asset in Malta.

## 4.4 Culture

As discussed in section 4.1, the strategic location of Malta in the middle of the Mediterranean Sea meant that the archipelago has been colonised by several different countries over the centuries, with the British empire the last to rule Malta (Holland 2014). The British presence influenced Maltese life (Holland 2014), and English norms were largely embedded within Maltese society, including education (Holland 2014), constitutional law (Mifsud Bonnici 2017), and policies such as driving on the left-hand side of the road (Bajada & Titheridge 2016).

While Maltese society follows English norms, Maltese culture is Mediterranean. Friggieri (2012) described the Maltese character as Mediterranean, southern European, insular, small, and peripheral. As islanders, Maltese people are constrained by the island mentality that makes them inward-looking – thus making them interested in themselves (Friggieri 2012). However, concurrently, they are always in search of the outside world (Friggieri 2012) and trying to associate themselves with other countries.

As an island in the middle of the Mediterranean, Malta's natural assets are the natural grand harbour, its geographical strategic position, and the sunny Mediterranean climate (Pollacco 2003). These assets attract tourists to Malta and are part of Maltese culture.

The Maltese value tourism because, as discussed in sub-section 4.3.2, the Maltese economy is dependent on the hospitality industry. Although the Maltese interact with tourists and consider tourism important, they still value their traditions and remain detached from tourists (Black 1996).

### 4.4.1 Gossip and Hearsay

Gossip and hearsay in Malta are embedded within the culture as in other cultures around the world (O'Reilly Mizzi 1994). In Malta, gossip and hearsay are associated with its social and environmental conditions, which establish the perfect circumstances for gossip and hearsay to take place.

The social and environmental conditions are, namely, a code of honour. Honour is the value of a person as perceived on both a personal level, as well as in the eyes of the

community; it is a matter of being of good repute (O'Reilly Mizzi 1994). Another social condition is the role of women in society, which is influenced by the Catholic Church. The traditional Maltese woman is a housekeeper, who is viewed as the foundation for the Maltese family. Hence, since most women spend their day at home and meet other women while doing errands or when at church, gossiping takes place (O'Reilly Mizzi 1994).

Gossiping is influenced by two environmental conditions. These are the small size of the island with the concomitant face-to-face nature of social interaction, and the physical layout and architectural style of Maltese communities. These conditions provide the right environment for gossip (O'Reilly Mizzi 1994).

Gossip plays an important part in enforcing normative behaviour (O'Reilly Mizzi 1994). Although there is a strong division of social roles by gender, which is common among many Mediterranean cultures (O'Reilly Mizzi 1994), gossiping is done by both women and men. The division and manner in which gossip takes place depends on the activities done by the genders; for instance, males gossip within the working environments (O'Reilly Mizzi 1994).

Gossiping is done on any aspect or activity that happens within the community, thus influencing hearsay, which can have an indirect role in influencing customers' attitudes (Litvin et al. 2008), in this case, bus users and potential bus users.

The small size of the island leads to the belief that everyone tends to know everyone else (Boissevain 1974). There is no sense of anonymity, and if one behaviour deviates from the norm, it is difficult to move to another part of the community and start again (O'Reilly Mizzi 1994).

Gossip and hearsay are powerful weapons that can affect the social structure of a community, and they form an important social activity that operates within local communities and that can be used to monitor and enforce behaviour in society (O'Reilly Mizzi 1994).

### 4.4.2 Grumbling and Stakeholder Involvement

Apart from gossiping and hearsay, another Maltese trait is grumbling, known as 'Maltese gemgem'. The British during colonial times, used this onomatopoeia to describe the grumbling sound from the Maltese language (Zammit 1988). Grumbling involves complaining (Cambridge Dictionary 2017), but without making one's own voice significantly heard in society. Maltese people grumble about issues that annoy them without protesting officially. Consequently, Maltese people are unaccustomed to voicing their concerns as stakeholders with the relevant authorities when certain issues arise.

The idea of stakeholder involvement was only introduced in Malta in 1998, with the signing of the Aarhus Convention, which was ratified in 2002 (Malta Environment and Planning Authority 2009). Even though the practice was officiated with this convention nearly twenty years ago, the practice of stakeholder involvement in Malta still requires significant improvement.

In Malta, stakeholder involvement is done in the form of public consultation. Following this approach, projects are planned and decided upon, and only afterwards are stakeholders invited to share their opinion. This is a form of involvement that has been labelled as hearing but not listening (Conrad et al. 2011). Hence, this form of public consultation does not involve participation from the beginning of a project. This type of stakeholder involvement is only procedural, that is, to tick the check boxes of consultation for a project.

Therefore, rather than using official procedures, Maltese society resorts to grumbling and gossiping. This informal process takes place at the village level and through influential patrons, that is, persons who use their influence to assist and protect some other person, who then becomes a 'client' (Boissevain 1993). A patron is often a politician (Boissevain 1993); politicians are influential persons who do favours for their patrons in return for votes. This informal way of sharing concerns and getting favours done is much more effective than the official procedures of stakeholder involvement.

Such an informal procedure, however, is quite dangerous, as it could lead to personal interest gains rather than benefitting the country. Consequently, political integrity is lost. Given the size of Malta and the common notion that if one knows five families, one would have a connection to everyone on the island (O'Reilly Mizzi 1994), such situations are more prone to happen.

## 4.5 Politics

Politics in Malta dominate the culture. Political loyalties in Malta are strong, stable, and rooted in social and family background (Briguglio 2009). In addition, political patronage has become influential to an extent that politics "has become a corrosive zero-sum contest characterised by factional loyalty that reaches a veritable frenzy just before elections" (Boissevain 1993 p. 150). Essentially, there are two major political parties, and each party has its devoted followers. Thus, political campaigns before elections are harsh and animated with mass meetings filled with thousands of loyal party supporters.

With independence in 1964, Malta adopted the Constitution as the self-declared supreme law of the land (Constitution of Malta 1964). Thus, Malta is a liberal parliamentary democracy (Constitution of Malta 1964). The Constitution safeguards the fundamental human rights of citizens, and has executive, judicial, and legislative powers; regular elections are based on universal suffrage – persons of 18 years and above have the right to vote (Constitution of Malta 1964).

General elections take place every five years (Constitution of Malta 1964). Since 1921, the voting system in Malta has been based on the system of proportional representation with the single transferable vote (Boissevain 1993).

The president is appointed by parliament and is the constitutional head of state. Once the leader of the political party wins the majority of parliamentary seats in a general election, the president appoints that leader as the prime minister. The prime minister is the head of government and thus is the highest official in Malta. Upon the recommendation of the prime minister, the president appoints the individual ministers to head the ministries (Constitution of Malta 1964). Each ministry is responsible for the

appointed bodies, such as agencies, authorities, commissions, foundations, committees, and government departments (Constitution of Malta 1964).

There are two main political parties in Malta: the Nationalist Party (PN) and the Malta Labour Party (PL). In the 1980s, party ideology was characterised by nationalism (with the PN) and socialism (with the PL) (Briguglio 2009). The PN's ideology follows the approach of the democratic development of the nation built on freedom and social justice according to Maltese, Christian, and European traditions (Briguglio 2009). In the late 1990s, the PL embraced a more free-market economy approach within a stable modern democratic framework. This approach aimed at attracting the vote of both the middle and the working classes (Briguglio 2009). Other minor parties exist, but they have never managed to win parliamentary representation (Briguglio 2009). None of the Maltese political parties aims for revolutionary change; they differ regarding many issues, such as privatisation and taxation, but agree on the fundamentals of the constitutional order and democratic processes (University of Malta 2017).

Party loyalty characterises the Maltese political context, and the turn-out in general elections is the highest in Western democracies, always exceeding 90% percent of the electorate (Briguglio 2009). In fact, Malta has the highest free voter turnout in the world (Grech 2009). This high voter turnout is linked with a high degree of partisanship, which is impressively loyal to the respective political parties.

### 4.6 Public Attitudes

According to Maltese residents, the two most important issues facing Malta are immigration (46%, compared to 26% from the EU28), followed by the environment, climate, and energy issues (26%, compared to 7% from the EU28) (European Commission 2016). Awareness of and concern about environmental issues amongst Maltese residents is not recent. An earlier local survey in 2008, the Public Attitudes Survey (PAS), indicated that 70% of the participants agreed that air quality was the top concern; this is compared to 52% in 1999 (Malta Environment and Planning Authority 2010).

Although Malta has a car-oriented society, 47% agreed and 42% strongly agreed that when air quality emissions exceed health limits car use should be restricted (Malta Environment and Planning Authority 2010). Maltese residents agreed (agree: 54% and strongly agree: 31%) that they would accept stricter vehicle tests to improve air quality (Malta Environment and Planning Authority 2010). These questions referred indirectly to car-related policies, associating car use with externalities such as the impact on the environment and on health. In this manner, the survey captured the Maltese public's attitude on such issues.

## 4.7 Transport

Malta has an extensive road network, which is 2400 km long. Worldwide, it is one of the densest road networks (762 km of roads/100 km² of land area) (Transport Malta 2016c). The roads are classified into arterial and distributor roads, which are the strategic and supporting roads. Secondary roads are local access roads (Transport Malta 2016c). A set of arterial roads link the north with the south of Malta. In the North, the Cirkewwa Ferry provides access to Gozo, and in the south, in Birzebbuga, there is the Freeport (Figure 4.5).

Roads developed from a radial system stemming from Valletta, and linked with a series of cross connecting roads between towns and villages (Attard 2005). As explained in section 4.1, many of the Maltese reside in the Northern Harbour and Southern Harbour Districts, and they commute on a daily basis on the road network towards the main administrative hub, Valletta (Transport Malta 2016c). Other employment locations are situated in the Northern Harbour and Southern Harbour Districts (Transport Malta 2016c).

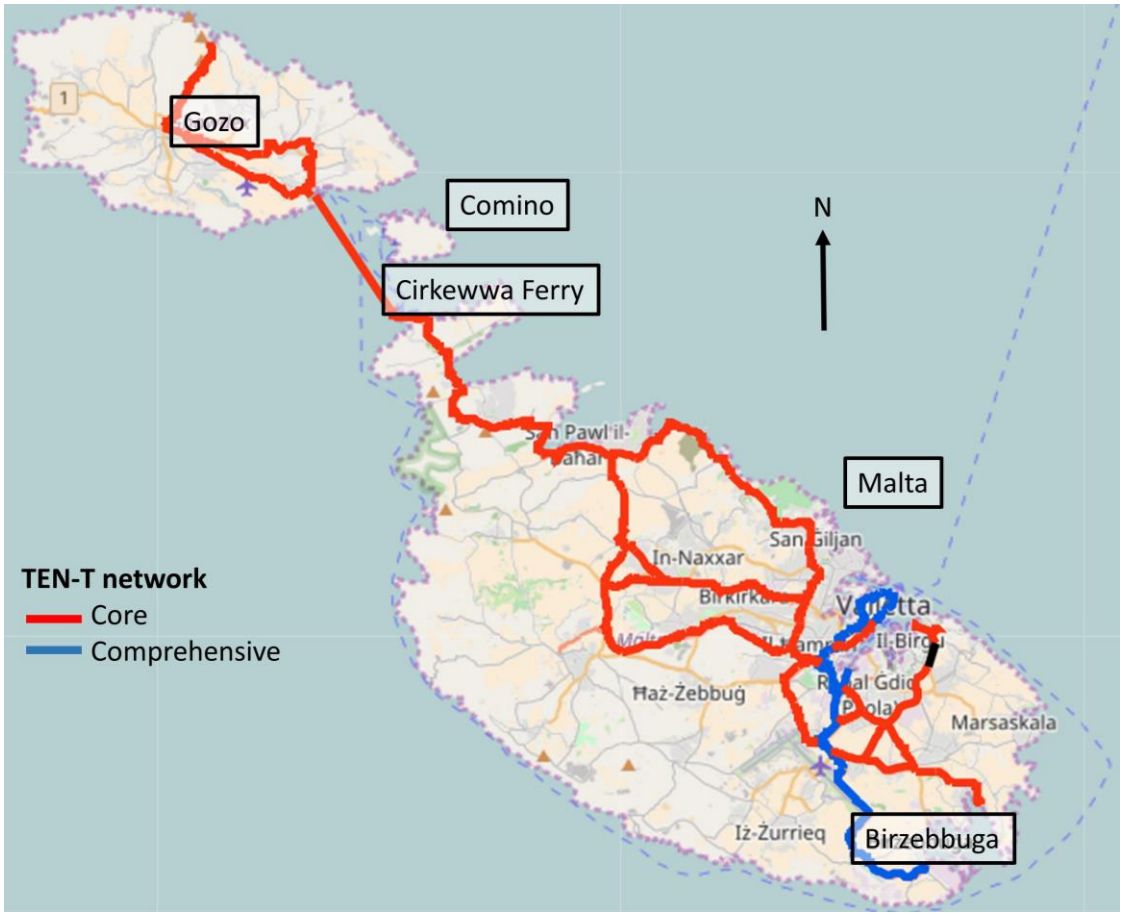


Figure 4.5 TEN-T Network (Source: Transport Malta 2016a)

### 4.7.1 Mode Use

The motorisation rate in Malta is the fourth highest in the EU, with 608 cars per 1000 inhabitants (Eurostat 2017b). The Household Travel Survey recorded 33.9% of households having two cars and 19.6% of households having three or more cars in 2010 (Transport Malta 2010b). Peer pressure plays a role in influencing car ownership (Malta Environment and Planning Authority 2003), as the car is an expression of personality and wealth.

In Malta, 75% of trips are made by car, and 15% are done by public transport (which includes 11.3% bus and 3.7% minibus/coach), with the remaining 10% carried out by non-motorised transport (Transport Malta 2010b). Over a twenty-year period (between 1990 and 2010), bus patronage decreased by 16.7%. As already discussed, on the road, competition takes place between cars and buses. Bus journey times (33.5 minutes) take

longer than car journeys times (19.3 minutes) (Transport Malta 2010b). Given Malta's small size and extensive road network (Figure 4.5), these times are considered long.

Poor land use/transport planning and the lack of enforcement are the main reasons for traffic congestion in Malta (Attard et al. 2015). Other contributing factors to traffic congestion include high car ownership rates and the high percentage of trips made by car (Attard et al. 2015). The estimated average number of seconds of delay per km is 16.93 seconds in Malta, while the European average is 5.74 seconds (Attard et al. 2015). Traffic congestion is not looked into seriously in Malta, and there is a lack of support from land use planning agencies, enforcement agencies, and other stakeholders that influence the congestion on Malta's roads (Attard et al. 2015).

## 4.8 The Bus Service before the Reform

The bus service in Malta started operating in 1905 (Lanfranco 1999). Initially, the vehicles were owned and operated by individuals (Bonnici & Cassar 1989, Lanfranco 1999). Then, in the 1970s, these owners-drivers united to form the Public Transport Association (PTA), and by 2008, the number of owner-drivers had increased to 440 (Childs & Sutton 2008). The PTA ran under the form of a monopoly for three decades. However, the government always served as a regulator of public transport through appointed bodies, such as Traffic Control Board (1930), Public Transport Authority (1990), Malta Transport Authority (2000), and recently, Transport Malta (2010).

The monopoly and a weak policy framework (Attard, 2005) resulted in an unreliable service. In addition, several other issues existed, such as inappropriate planning of the network, vehicles not being compliant with EU emission standards, and long working hours. This led people to believe that a new bus service was a distant dream, and bus drivers, due to the majority of them not exercising customer care skills, were both dreaded and criticised (Micallef 2009).

The decrease in bus patronage mentioned in sub-section 4.7.1 suggests that the bus became a less popular means by which people went to work (Transport Malta 2010b). The Public Attitudes Survey of 2008 (three years before the implementation of the reform) recorded mixed opinions about the level of satisfaction about the provision of

the bus service (11%: disagreed strongly, 28% disagreed, 26% agreed, and 8% strongly agreed) (Malta Environment and Planning Authority 2010).

A total of 508 buses worked on a day-in day-out roster. In a typical twelve-hour day of service, buses were in service for less than six hours. The frequency of services varied between half an hour and an hour in most localities (Childs & Sutton 2008). The government had granted permission to the PTA to operate unscheduled services on their day off (Xuereb 2001); these services included using the bus for school transport or for tourist trips, which meant extra income. Table 4.1 and Table 4.2 summarise operational and performance aspects of the PTA bus service.

In 1995, the government started to subsidise the bus service. Over the next five-year period, these subsidies increased by 50% (Attard 2006), reaching €9.6 million in 2010 (Times of Malta Online 2011). The subsidy guaranteed an income to the bus drivers-owners (Attard 2005), and, together with working opportunities during their days off, this gave the PTA little incentive to ensure that the network served the demand. At the time, fares were lower in Malta than in other countries, which was beneficial for the consumers (Attard 2005).

Network planning took place in an ad-hoc reactive manner. The network operated on a hub-and-spoke principle. The service radiated from the capital city, Valletta, which was linked to all the main villages around Malta (Sutton 2000), as illustrated in Figure 4.6. In addition, a smaller network was overlaid on top of this, serving important locations directly, such as the general hospital and the main campus of the University of Malta (Childs & Sutton 2008).

The fleet mainly comprised old trucks; these were mostly imported from the UK, and then rebuilt or adapted by the owner-drivers. The buses were characterised by high floors, narrow entrances and narrow gangways (Lidstone 2011). Out of 508 vehicles, only 142 were Euro III compliant (Attard & Hall 2003).

Information about the bus service was mostly provided in hard copy from kiosks at the main bus termini. The PTA website (no longer available) provided summer and winter schedules of the bus service (Table 4.1).

Table 4.1 Bus service operation under the PTA

| | **PTA Operation** |
|---|---|
| ***Duration*** | 1970s - 2011 |
| ***Type of Operation*** | Private Based Monopoly |
| ***Operator*** | Public Transport Association (PTA) |
| ***Composition of Operator*** | 400 bus owners-drivers formed the PTA |
| ***Regulation*** | Theoretically regulated by government through the various transport regulating entities that changed throughout the years |
| ***Network Planning*** | Hub-and-spoke principle<br>Main terminus – capital city Valletta<br>Planned in an ad-hoc reactive manner |
| ***Existing and promised fleet*** | 508 vehicles, including:<br>166 second-hand coaches imported from the UK<br>200 custom-built buses by bus owners, 142 modern low floor purpose built King Long buses |
| ***Comfort (including ambient conditions)*** | Characterised with high floors, narrow entrances, and narrow gangways |
| ***Information*** | Internet: summer and winter schedules provided on the PTA website<br>On boards and information kiosks in main termini |
| ***Compliance with Euro Emission Standards*** | Minority of fleet, Euro III |
| ***Contractual Obligations*** | Non-existent contractual obligations. Two main agreements – 1995 and 2000 |
| ***Subsidisation*** | Since 1995. By 2010 the subsidy reached €9.6 million |

Source: Bajada & Titheridge (2016)

Table 4.2 Performance of the bus service under the PTA

| | PTA Performance |
|---|---|
| ***Duration*** | 1970s - 2011 |
| ***Type of Operation*** | Private Based Monopoly |
| ***Operator*** | Public Transport Association (PTA) |
| ***Network coverage*** | 17,950,000 Km/year |
| ***Routes*** | 129 as at December 2010 |
| ***Bus stops*** | 1,254 as at December 2010 |
| ***Bus Drivers*** | 440 |
| ***Fare Structure*** | 1 trip: €0.47<br>Day: €3.49<br>3 day: €9.32<br>5 day: €11.65<br>7 day: €13.98 |
| ***Ticket sales*** | 31,277,114 |
| ***Passengers*** | 31,277,114 |
| ***Annual bus trip/capita*** | 75 |
| ***Operating times*** | 05:30 – 21:00 |
| ***Typical Promised Frequency*** | 30 minutes |
| ***Customer Care*** | Phone to regulator/operator |

Source: Bajada & Titheridge (2016)


MALTA
GOZO FERRY
ARMIER BAY
MARFA / CIRKEWWA
ZONE C
Mellieha Bay
Paradise Bay
GHADIRA
Selmun Tower
QAWRA
BUGIBBA
Popeye Village
Anchor Bay
MELLIEHA
ST. PAUL'S BAY
Ghajn Zeber Tower
MANIKATA
Golden Bay
GHAJN TUFFIEHA
Gnejna Bay
ZONE B
Lippija Tower
ZEBBIEH
ZONE A
GHARGHUR
NAXXAR
SAN GWANN
MOSTA
Mosta Dome
BAHAR IC-CAGHAQ
White Rocks
ST. ANDREWS
ST. JULIANS
SLIEMA
Tigne Tower
GZIRA
MSIDA
PIETA
VALLETTA
FLORIANA
G'MANGIA
HAMRUN
BIRKIRKARA
LIJA
ATTARD
STA.VENERA
MARSA
KALKARA
VITTORIOSA
SENGLEA
COSPICUA
TO ZABBAR
XGHAJRA
FGURA
ZABBAR
PAOLA
TARXIEN
Hypogeum
MARSASCALA
ST. THOMAS BAY
ZEJTUN
MARSAXLOKK
Ghar Dalam Cave
St. Peter's Pool
Fishing Village
BIRZEBBUGIA
Pretty Bay
Delimara Point
Freeport
HAL FAR
KALAFRANA
Wardija Tower
Hagar qim Temples
BLUE GROTTO
ZURRIEQ
GHAR LAPSI
QRENDI
SAFI
KIRKOP
MQABBA
SIGGIEWI
GUDJA / GHAXAQ
International Airport
STA.LUCIA
LUQA
ZEBBUG
QORMI
MTARFA
MDINA
RABAT
TA' QALI
Crafts Village
National Stadium
MGARR
Hagrat temples
San Anton Gardens
KUNCESJONI
BIDNIJA
Verdala Castle
Buskett gardens
DINGLI
dingli cliffs
Qawra Point
St. Paul's Islands
St. Paul's Bay
Ghallis Tower
Madliena Tower
Paceville
Red Tower
Anchor Bay
Ghajn Zeber Tower
Golden Bay
Gnejna Bay
Lippija Tower
Fomm ir-Rih
Mosta Dome
Savoy
Fort St. Angelo
University
Zonqor Point
Tigne Tower
Hypogeum
Tarxien temples
Ghar Dalam Cave
Delimara Point
Freeport
Wardija Tower
Hagar qim Temples
San Anton Gardens
Crafts Village
National Stadium
Verdala Castle
Buskett gardens
dingli cliffs
Fomm ir-Rih
Hagrat temples
Lippija Tower
Ghajn Zeber Tower
Red Tower
Anchor Bay
Golden Bay
Gnejna Bay
Popeye Village
Paradise Bay
Mellieha Bay
St. Paul's Islands
St. Paul's Bay
Qawra Point
Ghallis Tower
Madliena Tower
Paceville

Over the years, three major attempts were made by the government to improve the service:

- *1995* – an agreement between the regulator and the operators included the following: an increase in fare prices, additional direct services to the network, introduction of bus driver uniforms, upgrading of some of the old buses to newer ones, ticketing machines on all vehicles, and a change of colour of the vehicles from green to yellow and orange (Sutton 2000)
- *2000* – the regulator listed three social obligations that were imposed on the PTA by the state: to operate the bus service, to carry bus passengers, and to provide fixed fare tariffs (Sutton 2000)
- *2005* – the government sought help from foreign consultants, Halcrow (Buhagiar 2006)

Strong resistance to change from the service operators hindered the bus service improvements through frequent industrial action. One of the largest and most recent industrial actions took place in July 2008. This was triggered following the publication of the policy document "Public Transport in Malta. A vision for Public Transport which fulfils public interest in the context of environmental sustainability" (Ministry of Infrastructure Transport and Communications 2008), which eventually initiated the bus reform. The main objective of this policy document was to obtain a modal shift from car use to bus use.

The National Household Travel Survey (NHTS) estimated a potential rise of bus use from 11.3% to 40%, if public transport were improved (Transport Malta 2010b). The NHTS results showed that 3 out 10 respondents were not aware of the Public Transport reform, though 36.3% of car drivers and 48.1% of car passengers claimed that they would be willing to travel using an improved public transport system instead of travelling by car (Transport Malta 2010b).

## 4.9 The Need for the Bus Reform

The main aim of the reform was to implement change with a 'big bang' in order to incentivise an increase in bus use and achieve a modal shift (Ministry of Infrastructure

Transport and Communications 2008). This radical change was deemed necessary for implementation to take place within a five-year legislative period. To help achieve this aim, a single operator (Arriva Malta Consortium) was chosen to provide the service for the whole country (Attard 2012).

One of the aims of the reform was to reduce the subsidy to €6.2 million per year from the recorded €9.6 million in 2010 (Ministry of Infrastructure Transport and Communications 2011), as this subsidy had increased frequently over the previous 15 years (Attard 2012). Additionally, the reform aimed to make a distinction between the scheduled and the unscheduled bus services to avoid the provision of private services from vehicles used to operate a public service (Ministry of Infrastructure Transport and Communications 2008).

### 4.10 The Reform – the promised bus service

The promised bus service was to be operated by a private company selected through competitive tendering. The call for tenders was set across Europe in a bid to compete for the market, because there was only a limited selection of operators in Malta.

The winning bidder was Arriva Malta Consortium, which comprised Arriva International Ltd (holding 66.66% shares) and a local entrepreneur, Tumas Group (holding 33.3% shares) (Bajada & Titheridge 2016). Bus drivers included members of the PTA service.

Table 4.3 provides a breakdown of the promised changes to the bus service by theme, while Table 4.4 illustrates the promised performance aspects of Arriva Malta. Interestingly, the performance of the new service led to an increase of annual bus trip/capita from 75 in 2011 to 93 in 2013. There was an increase in bus use, which hypothetically is due to an increase in tourism. Data on bus use by tourists is, however, not available.

The bus service reform operated by Arriva Malta lasted approximately two years, between July 2011 and December 2013. Meanwhile, a new Maltese government was

sworn into office following the national elections of 2013, and for a year, the bus service became temporarily nationalised.

Table 4.3 Breakdown of promised changes by theme

| **Factors** | **Malta Bus Service Reform** |
|---|---|
| Political champion | • Minister of Infrastructure, Transport and Communications |
| Operators | • Selected through a bidding process, where the service was provided to the whole network of the island<br>• A service level agreement was included in the contract that bound the operator to provide the minimum level of service required by the regulator<br>• The operator had to provide the service to the whole country |
| Service Level | • The operator had to follow a rigorous service level agreement<br>• The operator was to be penalised if after the first year of operation, they failed to deliver the service according to the agreed contract. |
| Implementation | • The new service was to start with a 'big bang'<br>• The service started in July 2011, in the middle of the school summer holidays. |
| Network | • Removed redundancies of the old network by reducing the volume of buses into the capital city, Valletta.<br>• Distributed trips amongst major interchanges across the island.<br>• Introduced the idea of interchanging<br>• Included a mixture of fast, direct services, with traditional services and feeder services<br>• Planned bus priority infrastructure<br>• Included night operations |
| Transfers | • The service shifted from a principal radial network, having one major hub (Valletta, the capital city), to having several interchanges across the island to avoid unnecessary congestion along the roads into the capital city. |
| Fleet | • Modern<br>• Low emissions<br>• Accessible for persons challenged with mobility<br>• Mixed vehicles, including mini and midi buses, standard buses, and articulated buses |
| Drivers | • Obtained improved working conditions, following EU directives, including maximum driving times and minimum break periods |
| IT | • GPS devices installed on all vehicles for monitoring purposes and for the provision of real time information on stops, on major interchanges and on-board vehicles.<br>• Information was also to be disseminated on mobile phones and on the internet. |

Source: Ministry of Infrastructure Transport and Communications (2008), Malta Transport Authority (2009) and Attard (2012)

Table 4.4 Promised performance of the bus service under Arriva Malta

| | Arriva Malta Performance |
|---|---|
| ***Duration*** | 2011-2013 |
| ***Type of Operation*** | Private Company |
| ***Operator*** | Arriva Malta |
| ***Network coverage*** | 46,200,000 Km/year |
| ***Routes*** | 71 as at July 2011 |
| ***Bus stops*** | 1,925 as at December 2013 |
| ***Bus Drivers*** | ~800 |
| ***Fare Structure*** | 2 hr: €1.30<br>Day: €1.50<br>7 day: €6.50<br>30 day: €26<br>90 day: €72 |
| ***Ticket sales*** | 11,576,449 |
| ***Passengers*** | 39,438,822 |
| ***Annual bus trip/capita*** | 93 |
| ***Operating times*** | 05:30 – 23:00 |
| ***Typical Promised Frequency*** | 10 minutes |
| ***Customer Care*** | Phone/contact online/social networks<br>Contractually bound to perform surveys |

Source: Bajada & Titheridge (2016)

### 4.10.1 Regulation

Regulation was the responsibility of the local transport authority, Transport Malta. The service level agreement was signed by both parties (the operator and the regulator) once the operator had been selected. The contract bound the regulator to penalise the regulator should the latter not abide by the agreement while the operator was given one year to get used to the service before fines could start to be imposed as a result of under-performance (Bajada & Titheridge 2016).

### 4.10.2 Network Planning

The new network (Figure 4.7) was different from the traditional hub-and-spoke system (Figure 4.6). The idea of the new network was to have a widespread network accessing peripheral areas and introducing major interchanges around Malta, without having the need to access Valletta (Attard 2012). As Figure 4.7 shows, there were several major interchanges, which linked major routes to minor routes. Eventually, this network was modified to add the main radial routes emerging from Valletta (Bajada & Titheridge 2016).

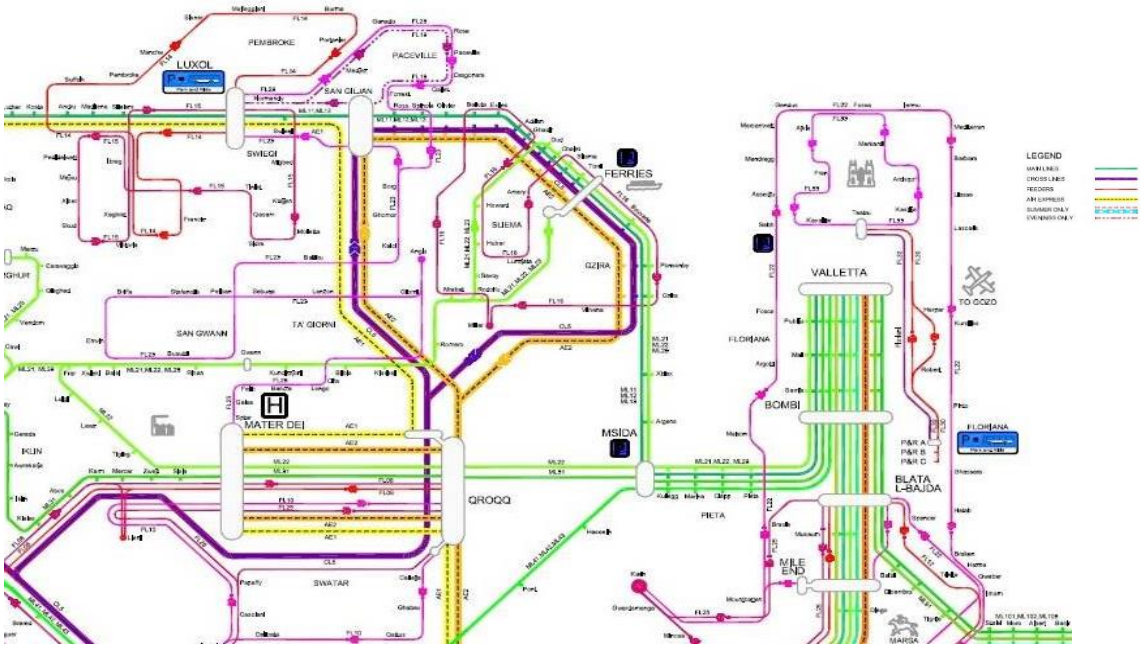


Figure 4.7 Indicative sample schematic map of the new promised network

### 4.10.3 Fleet

As indicated in Table 4.1, the fleet before the reform included 508 vehicles, of which 166 were second-hand coaches imported from the UK, 200 were buses custom built by bus owners, and 142 were modern low-floor purpose built King Long buses (Bajada & Titheridge 2016). The custom-built buses were a characteristic of Malta (Grima 2011 and Bajada & Titheridge 2016).

The buses for the new fleet were different from those of the old fleet. The new fleet included 230 new purpose built King Long vehicles. Eighty-six of these vehicles were between 2 and 7 years old, and there were 13 electric-hybrid buses (Bajada & Titheridge 2016). The new fleet buses had low floors for easy access and were air-conditioned. In addition, they complied with EU emission standards, because they were Euro V vehicles (Bajada & Titheridge 2016).

### 4.10.4 Information

The new service included an online journey planner, a service that had not been provided previously (Bajada & Titheridge 2016). Similarly, another new information service included on board information regarding destination and ‘next stop’ electronic

displays. Major interchanges had to have real time information, and all bus stops included posts that displayed the schedules (Bajada & Titheridge 2016).

### 4.10.5 Subsidisation

The bid made by Arriva Malta Consortium was for €10.25 million, which during the contract discussions, was negotiated down to €6.2 million (Ministry of Infrastructure Transport and Communications 2011). By 2013, however, Arriva Malta had asked for a subsidy increase of €45 million (Bajada & Titheridge 2016).

## 4.11 Shortcomings

Table 4.5 lists the problems and issues that arose prior to the launch of the service. At the end of 2013, Arriva Malta agreed with the government to a buy-out. Subsequently, the government had no other choice but to temporarily nationalise the service (Bajada & Titheridge 2016).

Table 4.5 Problems following the bus service reform

| **Factors** | **Malta Bus Service Reform** |
|---|---|
| Political | • Arriva Malta became an issue of major political debate in the country.<br>• The issues with the public transport service led to a motion of no confidence in government. |
| Operations | • In the first four months of operation, the bus routes were changed five times.<br>• During the first eight months of operation, the subsidy had to increase to an average of €8 million per year, nearly equivalent to the subsidy provided to the old bus service. |
| Sabotage | • On the day of the launch of the new bus service, 100 bus drivers of the old bus service did not turn up for work, leading to serious operational issues and delays. |
| Media | • Social media also played an important role in disseminating the negative perception of the new bus service. |
| Service Level | • There were massive queues at bus stops.<br>• Operating speeds took long and increased waiting times.<br>• There was poor bus regulation and enforcement. |
| Fleet | • The number of new buses available was not enough to cater for the demand,<br>• The unscheduled bus service was sub-contracted to provide the service.<br>• The imported second-hand articulated buses caught fire on more than one occasion, creating a safety issue for the passengers and other road users. |
| IT | • There were operational issues with the IT system.<br>• The mobile applications were not made available.<br>• The online journey planner provided inaccurate information. |
| Infrastructure | • Construction of bus priority lanes were delayed because of planning issues. |
| Fare | • Travel on the sub-contracted unscheduled bus service was free of charge.<br>• There was a discrepancy between the fare for the locals and the tourists. This issue of discrimination against the tourists was brought forward to the |

| | |
|---|---|
| | EU parliament by the opposing political party.<br>• The government was reprimanded by the EU and was ordered to settle the issue of the discrimination of fares.<br>• The subsidy was increased. |

Source: Jarosz (2011) and Bajada & Titheridge (2016)

### 4.11.1 Infrastructure

The government had to support the new bus service by implementing bus priority measures, such as bus lanes (Ministry of Infrastructure Transport and Communications 2008). This was an unsuitable time for infrastructural works to take place because the bus service reform was implemented at the end of the five-year legislative cycle and general elections were imminent.

### 4.11.2 Political and Management

As seen in Table 4.5, the reform became a major political issue. A motion of no confidence was presented in parliament by the opposition, asking for the resignation of the minister responsible for the reform (Sammut 2011). The latter, however, did not resign, but defended the need for the bus reform. He was reported as saying: "Very quickly we will forget how things were in the 'old days'…" (Schembri 2010).

Eventually, the Prime Minister intervened. He established and chaired a task force to mitigate the resultant problems of the reform (Times of Malta 2011); however, the opposition continued to criticise heavily the new bus service (e.g., Dalli 2012).

This was because the bus service suffered from problems such as having long waiting times, there being a general feeling of chaos, and bus priority projects being set aside, because of the elections (Jarosz 2011). The network was revised five times within three months of operation (Coach and Bus Week 2011).

In addition, the new service was heavily criticised in the media (e.g., Micallef 2012). Later, three years after Arriva Malta had left the island, one of the CEOs confided that "Malta was an absolute unmitigated disaster. Everything else in Europe (referring to Arriva operations) had been successful, but this one we'll put our hands up to, that it all went wrong" (Holley 2016).

Furthermore, the management within Arriva Malta, which was foreign, was unstable; the Arriva Malta operations management changed at least three times in two years (Coach and Bus Week 2013).

### 4.11.3 Operations

From an operational viewpoint, when the new service started, the operator did not deliver the minimum level of service to which it had agreed (Jarosz 2011). Frequencies being offered were lower than programmed, and since buses shared the roads with private cars, bus bunching increased, damaging waiting times, reliability, and comfort even further. There were visibly long queues at the bus stops that, apart from being unacceptable, became a strong negative image for the media and for non-users of the system (Jarosz 2011, Bajada & Titheridge 2016).

Another problem was that, the public were not familiar with the new routes, and, at times, even the bus drivers confused the routes, leading to more chaos (Bajada & Titheridge 2016). In order to cater for demand, both services had to rent additional buses to supply a suitable number of vehicles on the road and thus mitigate unreliability and punctuality issues. This meant sub-contracting the unscheduled bus service providers, which involved going against one of the objectives of the reform (Bajada & Titheridge 2016).

Additionally, second-hand articulated buses were imported from London, which later created major safety issues. The buses started catching fire, due to a combination of maintenance issues and the hot summer weather (the average maximum temperature in Malta in summer ranges from 25°C to 30°C) (Bajada & Titheridge 2016).

IT systems implementation was also difficult. The required GPS devices were installed, but the IT system failed to operate properly, leading to serious issues with the information provided to passengers (Bajada & Titheridge 2016). On bus stops in major interchanges, no information was visible on the screens, or when it was shown, it showed the wrong timings. On board the vehicles, on-screen information occasionally indicated place names in China (the buses were built in China), rather than Maltese bus stop names (Jarosz 2011). Thus, misinformation led to further confusion and a general

feeling of unreliability. Data, however, show a high percentage of reliability and punctuality, even though under the Arriva service these were the lowest recorded (Table 4.6).

Table 4.6 Reliability and Punctuality for Arriva, Nationalised and ALESA services

| Year | 2013 | 2014 | 2015 |
|---|---|---|---|
| Average Route (%) Reliability | 90 | 97 | 93 |
| Average Route (%) Punctuality | 91 | 94 | 93 |

Source: Transport Malta (2016a) – N.B definitions and methodologies were not provided in the report.

There was also a delay in installing the ticket vending machines. This meant fares had to be paid on board the vehicles because the ticket machines that were supposed to be available at all major bus stops either had not yet been installed or were not working (Bajada & Titheridge 2016). This situation resulted in further delays to the service and increased journey times.

## 4.12 Improvements to the service quality following the changes

Although the bus service started operating while still suffering from major issues, there were still some positive outcomes, as shown in Table 4.7, and some service quality aspects improved (Attard 2013, Bajada 2015).

Table 4.7 Improvements following the bus service reforms

| **Factors** | **Malta Bus Reform** |
|---|---|
| Service Level | • Bus driver behaviour improved, leading to better customer care.<br>• Comfort on board the vehicle improved, because of new vehicles and controlled air conditioning was made available on-board the vehicles.<br>• The new vehicles were Euro V compliant, leading to less air pollution.<br>• Operating hours of the service increased.<br>• Accessibility for users with reduced mobility improved. |
| IT | • Technical issues started to improve slowly with time, mainly on-board the buses and at major interchanges. |
| Infrastructure | • In areas where bus lanes were available, the service was faster. |

Source: Attard (2013), Bajada (2015) and Izatt (2015)

Users with reduced mobility were now able to access the bus more easily because of the new low-floor fleet with appropriate ramps for wheelchair users. Bus driver behaviour

had improved, leading to a better customer service, and the drivers wore a uniform (Jarosz 2011). Additionally, bus drivers' workloads followed EU regulations (Jarosz 2011). In addition, ambient conditions on board the vehicles improved, as these became air-conditioned.

Air quality improved because the new vehicles were Euro V compliant (Izatt 2015), and technical issues, such as the IT problems, were gradually resolved. Furthermore, closed-circuit television cameras on board the fleet enhanced security, while bus stops in major interchanges were improved by the inclusion of ramps and tactile surfaces for people with disabilities (Attard 2013).

## 4.13 Departure of Arriva Malta

After Arriva Malta gave up the concession of operation, and the new government had been elected, the newly appointed Minister of Transport and Infrastructure launched a public consultation. This consultation sought to identify people's main concerns with regard to the bus service (Transport Malta 2013). At the same time, the bus service became temporarily nationalised. This means the government became both the operator and the regulator. As discussed by Finn (2003), in such situations, services become expensive to operate, and enforcement becomes difficult to control mainly due to conflicts of interest. As shown in Figure 4.8 bus passengers increased after the reform, and with the nationalised service annual bus passengers continued to increase.

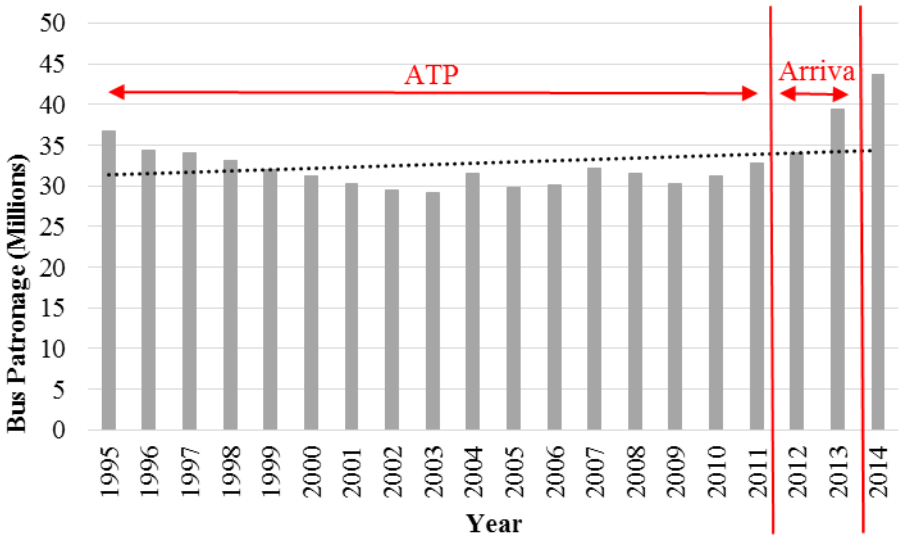

Figure 4.8 Bus patronage from 1995-2014

In January 2014, a call for Expressions of Interest (Transport Malta 2014) was launched to identify international bidders that might be interested in operating the new service. Contrary to the previous procedure, instead of then issuing a formal call for tenders, the government started discussions and negotiations with the Spanish company, Autobuses Urbanos de León (ALESA). The minister also confirmed that the subsidy would now increase to €23 million to provide an efficient bus service (Times of Malta 2014). In January 2015, ALESA started operating the bus service in Malta, keeping the company name Malta Public Transport.

## 4.14 Influence of Social Norms on the Bus Reform

In this research, social norms are defined as 'what is normal practice'. As discussed in Chapter 3, sub-section 3.6.2, based on normal practice, individuals perform their behaviour according to what one ought to do. This sub-section draws from the description of this case study presented in this chapter (Chapter 4), and assumes how social norms might affect the implementation of the bus reform and bus usage.

It is envisaged that based on normal practice, and given the car-oriented culture the reform might prove difficult to be successful in terms of modal shift. Car users who use their private mode of transport on a daily basis would consider this practice as normal and might be complacent. This attitude of car users might not contribute to an increase in bus usage. Bus users, especially captive bus users, such as students and unemployed persons might continue using the bus.

Regarding tourists, their mode of transport might depend on what type of tourist they are, for example, whether they live in a five-star hotel or a hostel. Furthermore, tourists who visit Malta (excluding UK tourists) come from countries that drive on the right hand side. Driving in Malta takes place on the left hand side which may be a deterrent for tourists to drive. Hence, it is possible that tourists' use of the bus service after the reform might increase if the number of tourists who visit Malta increase.

# Chapter 5 Research Methodology

This chapter describes the research approach taken to explore the conceptual model described in Chapter 3. The outline of this chapter is as follows. The first section is about the case study approach and the natural experiment, followed by the aim and the research questions. The next section is about data, specifically, data collection and the sample characteristics. The techniques used to analyse the data are then explained, and this section is followed by the limitations section.

## 5.1 A Case of Serendipity

This research is a case of serendipity. The researcher worked on the bus reform, and eventually, an opportunity to join academia arose. As part of the contract conditions to join academia, the researcher started reading for a PhD in October 2010, before the start of the reform. As the researcher had a personal interest in transport, and was working on the bus reform, the chosen topic was the one being presented in this research.

### 5.1.1 The Natural Experiment

Natural experiments are empirical studies used to assess the impacts of policy interventions. The Malta bus reform is the policy intervention in this case, and the natural experiment approach is used to identify the impact of the bus reform on behaviour and policy. It is important to note that the natural experiment approach does not allow the researcher to control the situation (Dunning 2008).

### 5.1.2 Misunderstandings about Case Studies

A case study provides in-depth information with specific findings related to that particular case, a practice that at times has been criticised (Ruddin 2006). However, it not only provides detailed information of a single example, but it also provides trustworthy information (Ruddin 2006). Moreover, case studies reveal the complexity of human behaviour and other issues (Flyvbjerg 2006), and this is what this study does.

In research, it is acknowledged that there are five misunderstandings about the use of case studies (Flyvbjerg 2006). The first misunderstanding is that theoretical knowledge is more valuable than practical knowledge. Secondly, one cannot generalise on the basis of an individual case, hence the case study cannot contribute to scientific development. Thirdly, the case study is most useful for generating hypotheses, which refers to the first stage of a total research process, whereas other methods are more suitable for hypothesis testing and theory building. The penultimate misunderstanding is that the researcher's own preconceived notions produce bias in the case study. Finally, it is often difficult to summarise and develop general propositions and theories on the basis of specific case studies (Flyvbjerg 2006).

### 5.1.3 Advantages of the Case Study Approach

Flyvbjerg (2006), Ruddin (2006), and Van Wynsberghe and Khan (2007) argued that these misunderstandings are myths. Indeed, Van Wynsberghe and Khan (2007) supported Flyvbjerg (2006) in saying that context-dependent knowledge is more valuable than predictive theories that can lead to nowhere.

Regarding the second misunderstanding, Ruddin (2006) supported the idea that generalisation can be based on a single case study, as single case studies provide cumulated wisdom and can be applied to synonymous contexts (Ruddin 2006). Rather than being biased towards their preconceived notions, researchers are biased towards falsification and so recognise flaws in these same notions (Flyvbjerg 2006, Van Wynsberghe & Khan 2007).

Finally, case studies allow the introduction of nuance and complexity in understanding a particular topic (Van Wynsberghe & Khan 2007). Flyvbjerg (2006 p. 241) argued that while case studies "should be read as narratives in their entirety", they contribute to the development of cumulative knowledge. Van Wynsberghe and Khan (2007) expanded further on this point by stating that the nuance and complexity are revealed further when the unit of analysis is defined, thus providing a central message.

In the case of this research, the units of analysis are questionnaire and interview participants, who are Maltese residents and tourists. The interviews also include

transport professionals. These participants reveal factors that influence their behaviour. Another unit of analysis used in this research is policy and institutions. The central message in this case is unpacking the complex dynamics involved in a bus reform regarding behaviour and policy.

### 5.1.4 Transferability of Case Studies

Thus, case studies offer important information about a particular case, and such information is transferable to other cases that have similar contexts. The use of the bus reform in Malta as a case study is one such example.

As Preston (1999) discussed, lessons can be learnt from bus reforms and then applied to other situations. It is, however, imperative to bear in mind the contexts of each situation.

## 5.2 Research Aim

The overarching aim of this research is to use a reform to explore complex factors, which include patronage numbers and service quality, but above all, to reveal the relationships between the following three aspects in the context of a bus reform:

i. behavioural factors: intention, attitude, perceived confidence, social norms, capability, and opportunity
ii. bus policy used to implement the bus reform, and
iii. the role of institutional structures involved in establishing the bus reform.

### 5.2.1 Research Questions

This section focuses on the five research questions used to explore the proposed conceptual model. Each research question is explained, and related parts of the model are highlighted.

RQ 1: *How did attitudes, perceived confidence, capability, and opportunity influence the intention to use the bus before and after the reform?*

Research indicates that intentions influence behaviour (Verplanken et al. 1997, Bamberg et al. 2007, Zhu et al. 2012). It is unclear, however, how different behavioural factors influence the intention to conduct a behaviour.

As illustrated in Figure 5.1, intention may be influenced by attitudes towards bus use, perceived confidence in using the bus, capability of using the bus, and opportunity to use the bus. Each behavioural factor might be influenced by variables that are shared between other factors. For instance, the variable 'age' affects attitudes, perceived confidence, and capability. This shows the complexity of trying to identify the behavioural factors that influence intention.

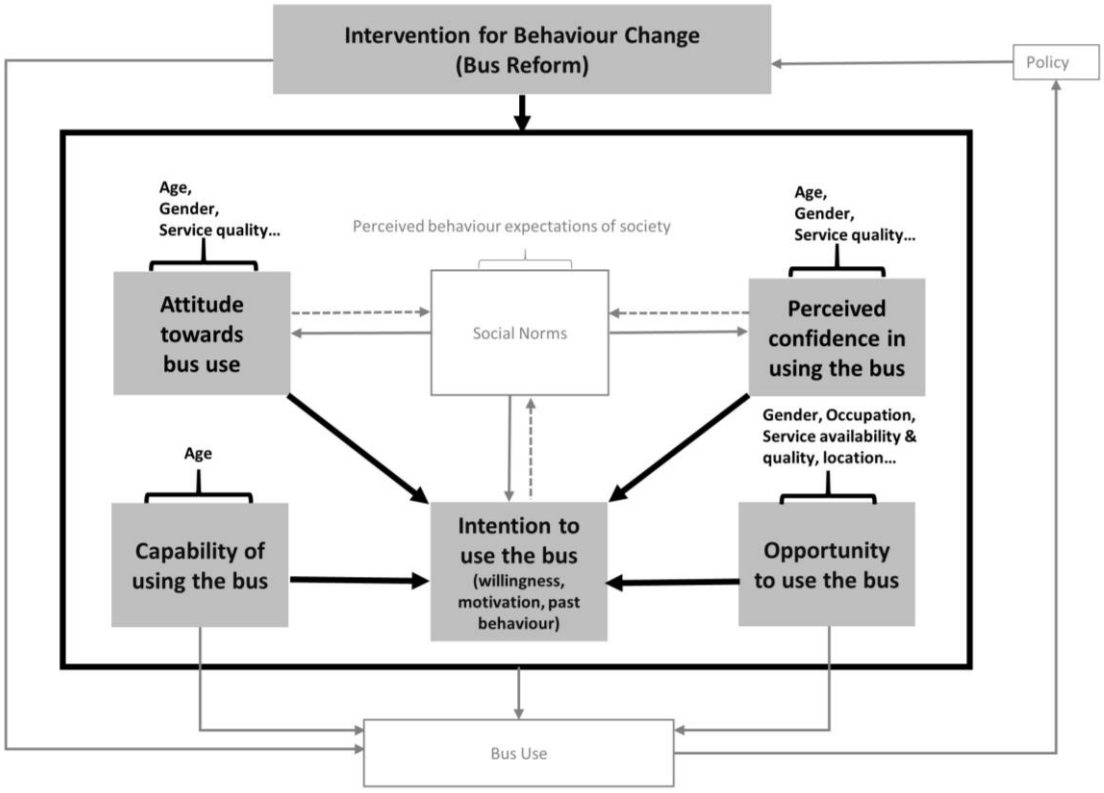


Figure 5.1 Components of the proposed conceptual model that relate to RQ1

RQ2: *How did the bus reform change attitudes and perceived confidence regarding using the bus?*

Figure 5.2 illustrates that one of the variables that potentially influences attitudes and perceived confidence is service quality. This research question focuses on the questionnaire participants' ratings of the bus service quality characteristics and the most

frequent mode used by the participants before and after the reform. This shows the effect of the reform on bus use through the participants' attitudes and perceived confidence.

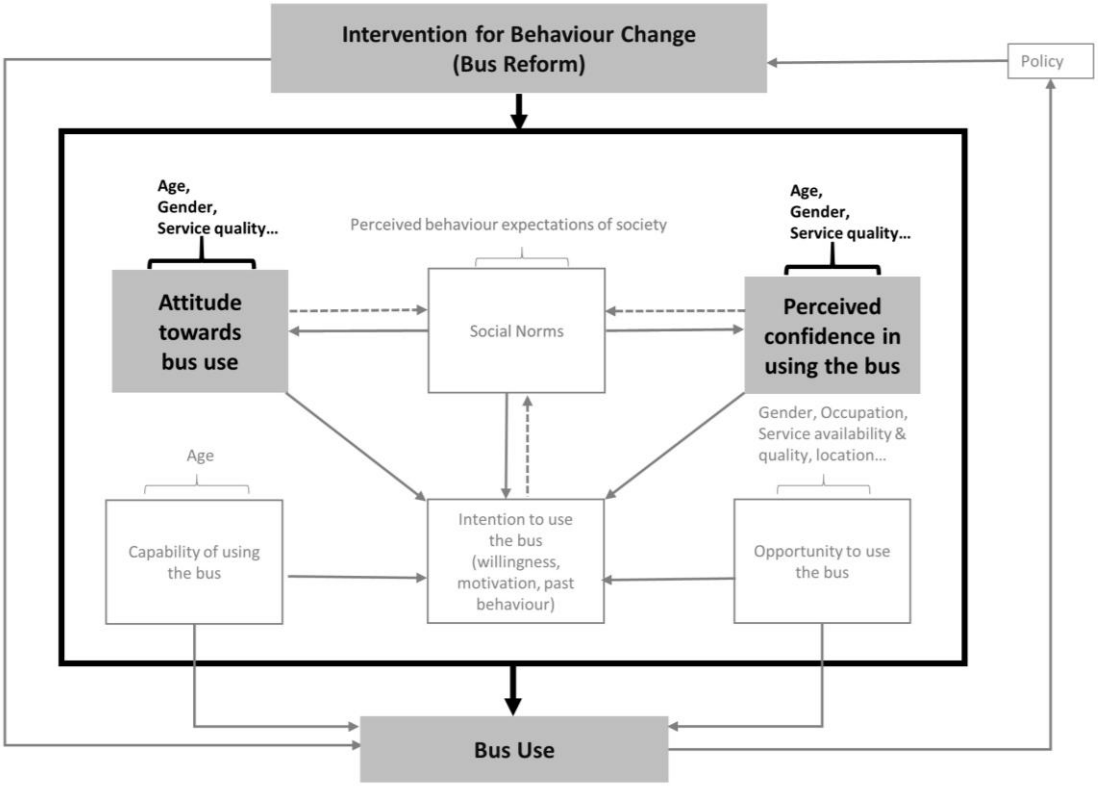


Figure 5.2 Components of the proposed conceptual model that relate to RQ2

RQ3: *How did the bus reform influence capability and opportunity to use the bus, and thus, bus use?*

RQ3 explores whether the intervention for behaviour change influenced bus use, and whether this had an effect on bus patronage. The government's main aim of the bus service reform was to achieve a modal shift from car use to bus use, and in this manner, increase bus patronage. Bus patronage increase is an indicator of a successful public transport service (White 1999).

Capability and opportunity are used to explore the extent to which they influence bus use. The interactions between capability, opportunity, and bus use are identified, through the number of variables that represent them. Figure 5.3 illustrates the proposed

model, where the highlighted parts reflect this research question. The links indicate the 'capability of using the bus', 'the opportunity to use the bus', and 'bus use'.

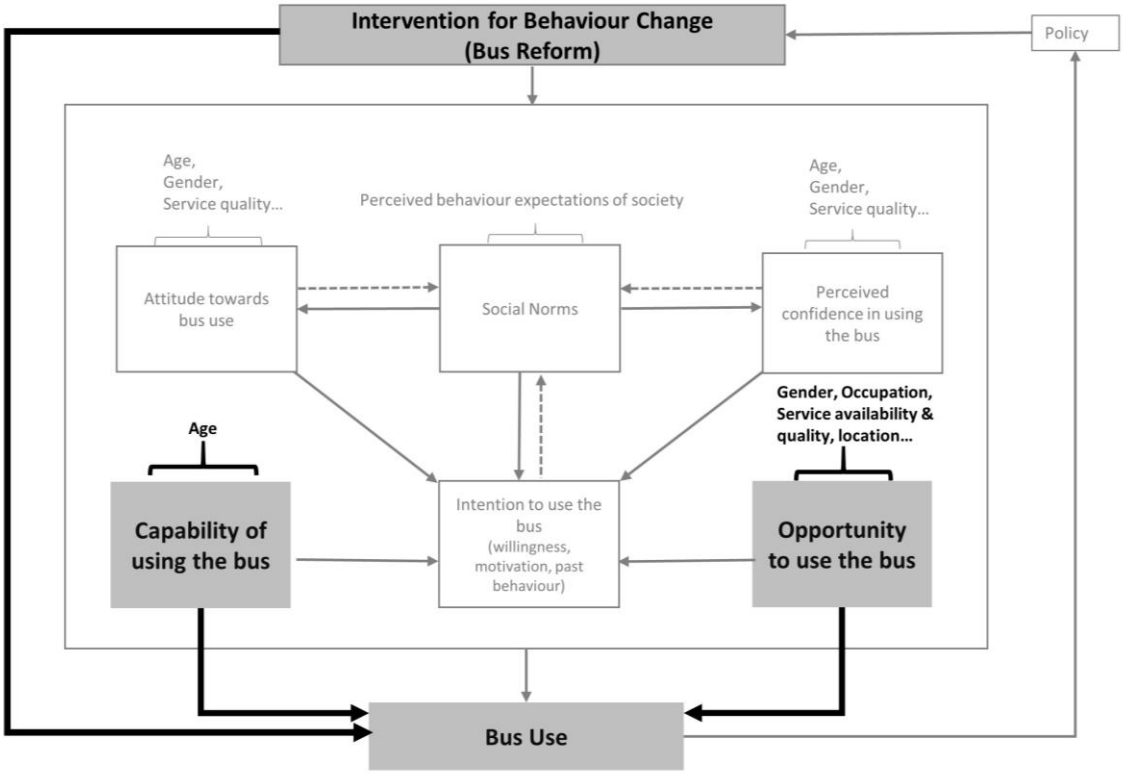


Figure 5.3 Components of the proposed conceptual model that relate to RQ3

RQ4: *After the reform, what were the effects (of social norms) on attitudes, perceived confidence, and intention to use the bus?*

RQ 4 is about the interactions linked with social norms. In the literature, social norms have been documented to influence attitudes, perceived confidence, and intention (Bamberg & Schmidt 1999, Anable 2005, Chen & Chao 2011).

The interaction between social norms and the other behavioural factors might be two-way, hence the bi-directional arrows in Figure 5.4. The bold lined arrows show that bus reform can influence social norms. Therefore, social norms might influence attitudes, perceived confidence, and intention. This influence might be subjective, which led to the use of the brackets in RQ4.

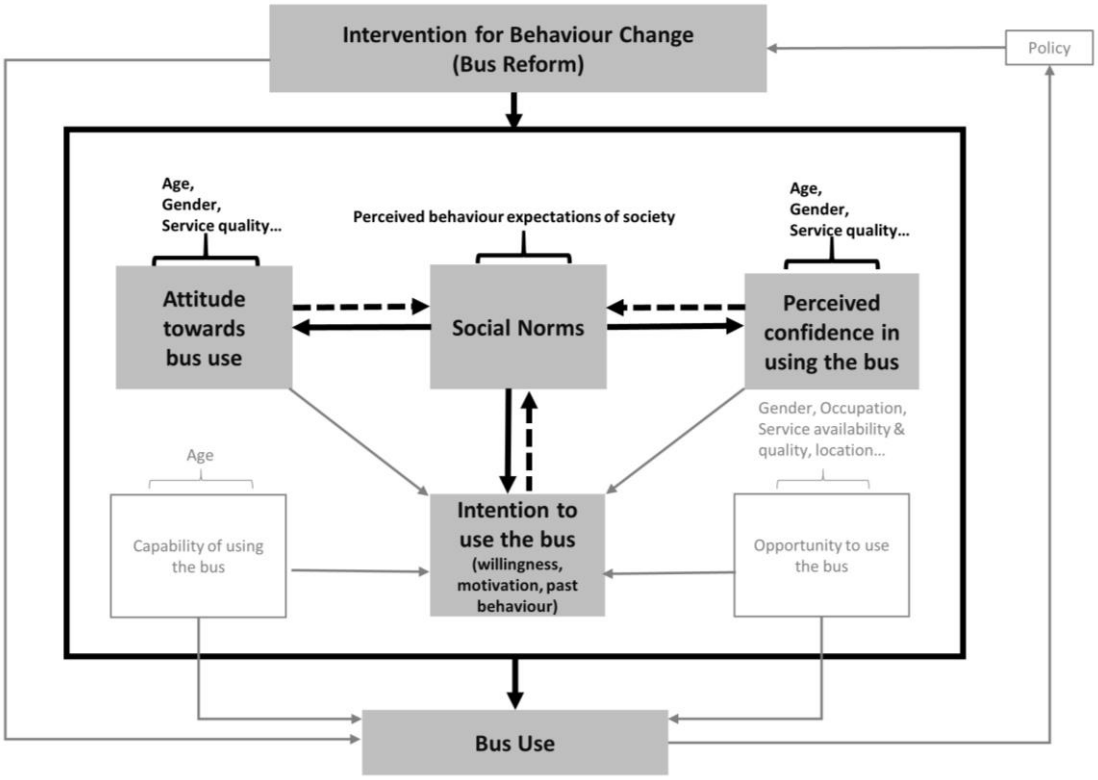


Figure 5.4 Components of the proposed conceptual model that relate to RQ4

Figure 5.4 shows a potential effect of the behavioural factors, attitudes, perceived confidence, and intention on social norms. In this case, the dotted arrows are used because the process can take years, which might result in decades of research. In this research, this link is explored briefly.

RQ5: *To what extent did institutional structures and relevant policy influence the bus service reform as a policy tool, and how did transport professionals evaluate the bus service reform?*

As discussed in Chapter 3, sub-section 3.6.1, policy refers to institutional structures. The policy part in Figure 5.5 refers to institutional structures and their role in influencing policymaking and relevant decisions in implementing the bus reform.

Additionally, policy refers to the reform as the intervention for behaviour change (Figure 5.5). Consequently, RQ 5 includes policy and its influence on the bus reform, as the tool for behaviour change.

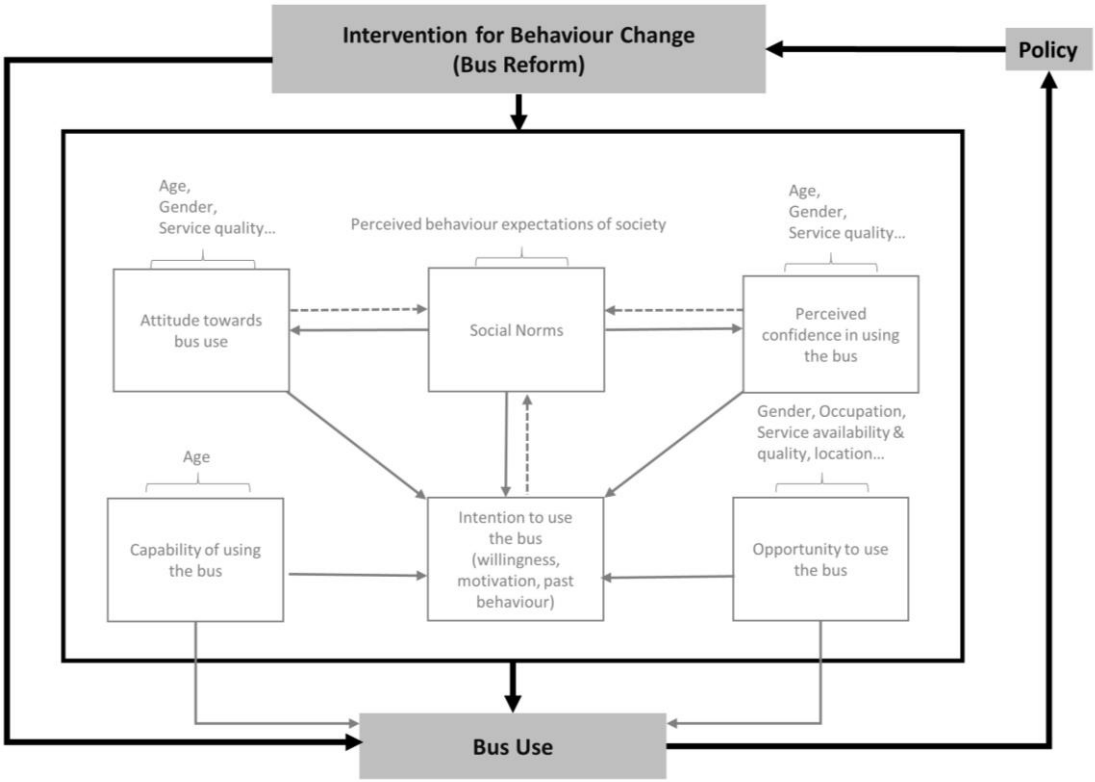


Figure 5.5 Components of the proposed conceptual model that relate to RQ5

Apart from being policy tools, reforms may lead to policy change. In Figure 5.5, the potential policy change is illustrated by the link between 'bus use', 'policy' and the interactions that are induced by people's attitudes following the 'intervention for behaviour change'.

## 5.3 Objectives

Each of the five research questions mentioned in sub-section 5.2.1 had an associated set of objectives. These objectives were addressed using mixed methods of data collection, including quantitative and qualitative data, over a period of four years.

### 5.3.1 Objective 1

1. *to identify the variables that influence intention, before and after the reform, from Maltese residents and tourists*

This objective aims to answer RQ 1. The main focus is the factor ‘intention’. The objective is to identify the relationships involved in the factors that influence intention amongst Maltese residents and tourists, before and after the reform.

### 5.3.2 Objectives 2 to 4

2. *to identify the influence of mode use on the bus service quality ratings by the questionnaire participants, before and after the reform*

3. *to identify demographic components that influence the ratings of bus service quality*

4. *to explore characteristics that portray attitudes and perceived confidence towards bus use*

These three objectives target RQ 2 and refer to pre- and post-reform scenarios. Attitudes are identified through service quality ratings given by Maltese residents and tourists before and after the reform. These questionnaire participants are also different mode users. Additionally, attitudes are explored through the demographic variables ‘age’ and ‘gender’.

Perceived confidence refers to the personal confidence of using the bus. As explained in Chapter 3, section 3.7, the variables ‘age’, ‘gender’, and ‘service quality’ draw on the perceived confidence to use the bus.

### 5.3.3 Objective 5

5. *To identify how the reform influenced the capability and opportunity to use the bus*

This fifth objective targets RQ 3. As in the previous four objectives, data are quantitative, using the questionnaire datasets before and after the reform from Maltese residents and tourists. The main component here is bus use, as it is influenced by the factors capability and opportunity. Capability is measured by the variable ‘age’.

As explained in Chapter 3, section 3.7, opportunity is measured by the variables ‘gender and occupation’, ‘service quality’, ‘location of participants’, ‘perceived average time taken to reach destination’, ‘preferred walking distance to bus stop’, and ‘acceptable number of bus connections’. Regarding tourists, ‘occupation’ is replaced by variables that are relevant for this population sample: ‘length of stay’, ‘type of accommodation’, and ‘reason for visiting’.

### 5.3.4 Objective 6

6. *To identify the extent to which social norms influence attitudes, intentions and perceived confidence to use the bus*

This objective targets RQ 4, which is answered through the qualitative data. Semi-structured interviews were carried out with Maltese residents and tourists one year after Arriva Malta had opted out of the contract. This dataset was used to supplement the questionnaire data and to provide further insight, which only qualitative data can provide.

### 5.3.5 Objectives 7 to 9

7. *To understand the extent to which institutional structures influence the bus service reform as a policy tool*

8. *To understand the extent to which policy influences the bus service reform*

9. *To identify how transport professionals evaluate the bus service reform*

These last three objectives target RQ 5. Secondary data are used to achieve objectives 7 and 8. Furthermore, insider knowledge contributed to enhance the information. As explained in section 5.1, the researcher worked on the bus reform, and this experience provided an opportunity to obtain insider awareness of the dynamics involved in the changes that led to the bus service reform. Insider knowledge always adds information to any research (Burgess 1984).

Objective 9 uses qualitative data obtained from the semi-structured interviews. These interviews were conducted during the same time and for the same purpose as discussed for objective 6. In this case, however, the population sample was transport professionals.

## 5.4 Data

The unit of analysis mentioned in sub-section 5.1.3, namely, questionnaires, interviews, policies, and institutions, involved a data collection process. The former two units of analysis included primary data collection, while the latter two involved secondary data sources. These data targeted the objectives in section 5.3.

### 5.4.1 Research Ethics

Before collecting the data, it was necessary to confirm whether the methods of data collection involved required approval from the UCL Research Ethics Committee. However, the research was exempt from requiring explicit approval. With the type of data to be obtained, it was sufficient to keep the participants anonymous; therefore, reference numbers were given to the questionnaires and the interviewees.

In each case of data collection, the participants consented to contribute to the questionnaires and the interviews. In the questionnaires, this information was provided at the start of the questionnaire (Appendix A). Regarding the interviews, the participants signed a consent form, a template of which is available in Appendix B.

The questionnaires to tourists were conducted in the departures lounge at Malta International Airport (MIA). In this way, tourists would have had the necessary experience of using the bus service or of hearing about it. To conduct these questionnaires, the necessary permissions were obtained from the management at MIA (Appendix C).

### 5.4.2 Pilot Studies

*Questionnaires*

A pilot study was conducted prior to the dissemination of the surveys. Twenty questionnaires were used for this preliminary study. The pilot study involved a thorough process wherein volunteers were asked to explain what they understood by each question. This helped to check whether the question communicated the intended meaning.

When the participants answered the questions, they were asked to state aloud the reasoning that led to their answer. Changes following the pilot study included altering the structure of the questionnaire, and altering wording that was too technical for the participants to understand. The estimated time to answer each questionnaire was 6 minutes.

*Interviews*

The interviews were semi-structured, meaning that all participants were asked the same eight questions, but additional questions were added as required to elicit more detail and to adapt to the interviewees' comments. The questions were adapted to target the different population samples of Maltese residents, tourists, and transport professionals.

The pilot study was carried out with two Maltese residents and two tourists. The aim of this pilot study was to confirm that the participants understood the questions. As in the questionnaire pilot study, the participants were asked to explain aloud their interpretation of the questions. On average, the interviews lasted 30 minutes.

### 5.4.3 Surveyors

The questionnaires were outsourced to four University of Malta students. Before starting collecting the data, the surveyors were trained how to conduct surveys.

The process involved meeting them individually and going through each of the questions together, and explaining what the aim was of each question. Once the surveyors returned the questionnaires, they were given a reward of €100 each.

### 5.4.4 Primary Data Sources

*Questionnaires*

The questionnaires were conducted two months before the reform, in May 2011, and a year after the implementation of the reform, in July 2012. They were conducted in a cross-sectional manner.

A cross-sectional type of study was the preferred option, as opposed to the longitudinal type of study. In this manner, there is a reduced risk of bias through "panel conditioning" (Ruspini 2002, p. 73). What happens in longitudinal studies is that if the same group of people are asked about the same topic, they tend to establish a bond with the researcher, and possibly answer according to what they think is required. Moreover, it was impossible to conduct a longitudinal type of study on tourists because return tourists would not have satisfied the sample size requirement. Furthermore, the cross-sectional type of study was also the preferred option for the Maltese residents, which was based on four reasons. First, to keep consistent with the tourist sample; second, the concern that people would not cooperate and participate once again in the survey; third, time constraints; and fourth, financial constraints.

The two questionnaires regarding the Maltese residents were conducted by means of a telephone survey. The advantages of a telephone survey are that they have the advantages of the qualities of a face-to-face survey in that they are live and immediate. Additionally, misunderstandings can be clarified, and hints picked up from the tone of voice and hesitations (Gillham 2010).

The tourist questionnaires were collected through face-to-face interviews at the departures lounge of the MIA. The tourist questionnaires varied slightly from the questionnaire used for Maltese residents, mainly as the aim was to gather data that varied from the residents' situation, such as accommodation.

*Questionnaire contents*

Table 5.1 summarises the questions and provides an interpretation for each question. The columns in Table 5.1 include first, the question number in the questionnaires and second, the questionnaire to which they referred. The third column provides a description of the question, and the fourth column describes the data type. The final column interprets the question to indicate the reason behind asking the question.

Table 5.1 Summary of questionnaire question details

| Q.# | Questionnaire | Question Description | Data type | Interpretation |
|---|---|---|---|---|
| 1 | Pre-reform – Maltese residents & Tourists<br>Post-reform – Maltese residents & Tourists | Gender | Nominal | Demography |
| 2 | Pre-reform – Maltese residents & Tourists<br>Post-reform – Maltese residents & Tourists | Age | Nominal | Demography |
| 3 | Pre-reform and Post-reform Maltese residents | Under which of the following categories would you classify yourself. Please select one of the following. | Nominal | Occupation |
| 3 | Pre-reform and Post-reform Tourists | Reason for visiting Malta<br>Post-reform tourists only: Is this your first time in Malta? | Nominal<br>Nominal | Tourist type<br>To identify whether the tourists experienced the PTA service |
| 4 | Pre-reform and Post-reform Maltese residents | To which town/village do you travel mostly? | Text and later Nominal | To identify the location that is travelled to the most. These were later gathered under the respective districts |
| 4 | Pre-reform and Post-reform Tourists | Length of stay | Nominal | Duration in Malta |

| | | | | |
|---|---|---|---|---|
| 5<br><br><br>6 | Pre-reform and Post-reform Maltese residents<br>Pre-reform and Post-reform Tourists | What is the most frequent mode of transport that you use?<br>What mode of transport did you generally use while in Malta? Select all that apply. | Nominal<br><br>Nominal | Maltese residents had to select one mode of transport.<br>Tourists could have used more than one mode, but during the questionnaires, they were asked to indicate the mode that they used most. |
| 5 | Pre-reform and Post-reform Tourists | a. Type of accommodation<br>b. In which town/village were you staying? | Nominal<br>Text and later Nominal | Accommodation type while in Malta<br>These were gathered under the respective districts |
| 6<br><br><br>7<br>8 | Pre-reform and Post-reform Maltese residents<br><br>Pre-reform Tourists<br>Post-reform Tourists | What is your average time taken to reach your destination that you mostly travel to?<br>What was the general average time taken to travel to your destination? | Nominal<br><br>Nominal | Perceived time taken to reach the destination<br>Perceived time taken to reach the destination, on average |
| 7<br><br><br>9<br>10 | Pre-reform and Post-reform Maltese residents<br>Pre-reform Tourists<br>Post-reform Tourists | Would you consider using the bus for frequent use?<br>Would you consider using the bus if you visit Malta again? | Nominal and Text<br>Nominal and Text | To identify the non-bus users' intention to use the bus. For tourists, all mode users were asked this question. Participants were asked to provide reasons. |
| 8<br><br>9 | Pre-reform and Post-reform Maltese residents, and Pre-reform Tourists<br>Post-reform Tourists | Rate the following set of characteristics according to what you think about the current bus service. For the post-reform the text was changed to New (Arriva) | Ordinal | 1 – worst, 5 – best, and 6 don't know |
| 8b,c<br><br>9b,c | Post-reform Maltese residents<br>Post-reform Tourists | The new (Arriva) bus service is better than the old bus service. Please give reasons for your answer. Post-reform tourists answered this question only if they were return tourists. | Ordinal and text | 1 – Agree strongly, 6 – Disagree Strongly |
| 8d, e<br><br>9d, e | Post-reform Maltese residents<br>Post-reform Tourists | The new (Arriva) bus service met my expectations. Please give reasons for your answer. | Ordinal and text | 1 – Agree strongly, 6 – Disagree strongly, 7 – I did not have expectations |

| | | | | |
|---|---|---|---|---|
| 9<br><br><br>10<br>11 | Pre-reform and Post-reform Maltese residents<br>Pre-reform Tourists<br>Post-reform Tourists | How far would you consider a bus stop to be within a suitable walking distance from your home? In the case of tourists instead of home this was 'accommodation' | Nominal | To identify the preferred walking distance to the bus stop |
| 10a, b<br><br><br>11a, b<br>12a, b | Pre-reform and Post-reform Maltese residents<br>Pre-reform Tourists<br>Post-reform Tourists | Please choose what you consider the two most important factors for a potentially successful bus service. Rating of factors is related to the selected characteristic. | Ordinal | To identify which bus service quality characteristics participants expect from a successful bus service |
| 11<br><br><br>12<br>7 | Pre-reform and Post-reform Maltese residents<br>Pre-reform Tourists<br>Post-reform Tourists | How many buses would you consider catching? | Nominal | To identify acceptable number of interchanges; for bus users post-reform, the answer was the actual number of interchanges |
| 12<br><br><br>13 | Pre-reform and Post-reform Maltese residents<br>Pre-reform and Post-reform Tourists | List any comments/suggestions on the bus service in Malta | Text | Open-ended question |

*Semi-Structured Interviews*

Semi-structured interviews were conducted one year after Arriva Malta had opted out of the contract, that is, they were conducted during the time of the nationalised service. The interviews were conducted with Maltese residents, tourists, and transport professionals, to identify in detail the different perspectives regarding the reform, thus giving participants the opportunity to look at the reform with hindsight. The transport professionals' interviews also gave insight into the bus policy.

*Maltese Residents and Tourists*

The questions revolved around the same topics but were different for Maltese resident bus users and car users, and for tourists (Appendix D). Prompts were used throughout the interviews to keep the interviewees talking, as suggested in Leech (2003). Table 5.2 provides a summary of the questions; the reason for asking the questions is given in the last column.

Table 5.2 Summary of interview questions and the reason for asking these questions

| Question | Interviewees | Reason for asking the question |
|---|---|---|
| What is your opinion about the bus service in Malta?<br><br>How did you hear about the bus service in Malta? What is your opinion about it? | Maltese residents car users and bus users, and tourists<br><br>Tourists | To identify the participants' ideas, perceptions, experiences, and expectations of the bus service delivery, quality, and reform. For tourists, this question was asked focusing on Malta and at home to see whether social norms influence their decisions. |
| Have you visited Malta before? | Tourists | To identify whether the tourists were return tourists and whether they had experienced the PTA and Arriva services |
| What types of transport do you use? | Tourists | To identify what type of mode users they are at home and in Malta |
| Have you ever used the bus? What was your experience?<br><br>How would you describe the bus service quality? Can you recall some experiences? | Maltese residents car users<br><br>Maltese residents bus users | To identify whether the car users experienced bus use, and to identify whether they had good or bad experiences of it<br><br>To identify opinions about the bus service from bus users' experiences |
| What is your opinion about using the bus? | Maltese residents car users and bus users | To identify whether participants (car users) are totally against using the bus, and to provide reasons for their answers. In the case of bus users, to see whether they are captive bus users or otherwise. To show intentions towards bus use as well. |
| Are you aware of changes regarding the bus service? | Maltese residents car users and bus users | To identify whether participants are interested in and informed about the service |
| What do you think about: Congestion, Impact on the Environment through transport, Anger related to traffic<br><br>Do you think that as an individual you need to do something to solve these issues? What about the role of the rest of society?<br><br>Do you think that the bus | Maltese residents car users and bus users, and tourists | To identify the participants' general opinion about these issues and to portray aspects of social norms and attitudes. In the case of tourists, these questions were asked in Malta's case and in their countries' case to identify whether the situation in their country influences their opinion<br><br>To identify perceived confidence and capabilities of doing changes, whether there might be opportunities. To identify whether the individual attributes the problems to society<br><br>To identify whether the participants |

| | | |
|---|---|---|
| is a way forward to improve these issues? | | consider the bus as an alternative mode of transport to solve transport-related problems |
| What would your family and friends think about you using the bus? | Maltese residents car users and bus users, and tourists | To identify aspects related to social norms. For tourists, this question was asked in the case of Malta and at the home country to identify the effects of social norms in their country of origin and whether this affects their intentions and behaviour when they visit Malta |
| What do you think about the future of the bus service in Malta? | Maltese residents car users and bus users, and tourists | To identify expectations about the bus service |
| Would you like to add anything else? | Maltese residents car users and bus users | Participants were free to answer anything they wished. |

*Transport Professionals*

These interviews were also semi-structured, in that all participants were asked the same eight questions (Appendix D), but additional questions were added as necessary to elicit more detail and to adapt to the interviewees' comments. Table 5.3 summarises the interview questions posed to transport professionals and provides the reason for asking the questions.

Table 5.3 Summary of interview questions and the reason for asking these questions

| Question | Reason for asking the question |
|---|---|
| How would you describe the situation of the bus service? | To identify whether the participants considered whether the impact of the reform was positive or negative, and to identify their views of the bus service delivery and performance |
| What were the main aspects that led to this situation? | To identify the participants' perspective about the outcome of the reform and its repercussions and positive outcomes |
| If the issues in 1 & 2 weren't there, what would the plans be/ and your plans be? | The assumption is that there were issues with the reform (as the questionnaire data indicated). To identify what was the ideal situation for the participants' personal viewpoint and the entity they represent |
| What were your hopes for the reform? | To identify the participants' agenda regarding bus use and the bus service after the reform |
| Would you make any changes in the current bus service? | To identify the extent to which the transport professionals considered that there should be more improvement in the bus service, and whether they have additional plans in mind |
| Are you aware of any plans for the future? | To identify the strategy (if any) and the way forward |
| What do you think the (realistic view) of the | To identify what they really think will be achieved following the reform and its impacts |

| | |
|---|---|
| bus service will be in the next five years? | |
| Would you like to add something else, which I may not have addressed? | Participants were free to answer anything they wished. |

### 5.4.5 Secondary Data Sources

*Institutions*

Information about institutions was obtained online. Government department websites and insider information were used.

*Policy Documents*

The policy documents were obtained from the respective entities' websites. The entities included the MEPA, TM, and MITC.

### 5.4.6 Data Sampling

*Participants and Sampling Strategy*

*Maltese Residents*

The sampling frame for the local population was the Census of Population and Housing 2005 (National Statistics Office 2007). Probability sampling was used, and participants were selected through stratified random sampling from the six districts that form Malta. This means that first stratification was applied per local council (amongst 68 local councils). The sample population was proportional to the enumerated population distribution by district. Then the electoral register was used to apply random sampling, and the potential participants were selected from the telephone directory.

The age groups from 11 years and above were selected from the census. These age groups were selected because the respective persons would have the capability and opportunity to use public transport, while having the option of using other transport modes, both as passengers and, where applicable, as drivers.

The age groups below 11 years were selected from the census and subtracted from the Maltese population size of 416,055 (National Statistics Office 2014a). The resultant population was 345,338. The required sample size for the resultant population was 384 (Appendix E). The sample size was calculated using a confidence level of 0.05. From the required sample number of 384, the target was rounded up to 400.

Stratification was necessary at a local council level. The selected age groups to be included in the sample were calculated proportionally for each of the 68 localities in Malta. This calculation provided the number of participants required for the questionnaires from each locality.

The sampling population for the Maltese residents was obtained from the 2007 Electoral Register (Department of Information 2007). This task involved another elaborate process to sort the population by household and eliminate personal information.

SPSS (IBM Corp. 2013) was used to generate the participants randomly. Once the potential participants were identified, the next step, which proved to be complex, was searching for the telephone numbers.

In Malta, the fixed telephone lines are still the predominant means of telecommunications (Malta Communications Authority 2011). Thus, telephone numbers were obtained from searches in the online telephone directory (GO p.l.c. 2012). GO p.l.c. is the predominant company that provides fixed telephone lines in Malta. They have an offer whereby calls between their fixed telephone lines are free.

In cases when the telephone numbers were not available, another random sample was performed to find alternative participants; this process was continued until the target of 400 was reached. This technique of doing random sampling was also done in cases when people were not willing to participate. The surveyors informed the researcher about the number of alternative participants required.

The surveyors had their fixed telephone lines with GO p.l.c., and they made the phone calls from their homes, free of charge. The calls were performed at various times during the day and during the weekends to try to reach to different population segments.

*Tourists*

The sampling frame was tourists reaching Malta by plane, because they form a substantial proportion of the tourists visiting Malta compared to tourists who visit Malta from cruises (Appendix F). The sample size for the tourist population was identified from the National Statistics Office (2011). The number of departing tourists for the year 2010 was 1,308,546. In this case, the required sample number was 384 (Appendix F). The target was rounded up to 400.

Purposive sampling was the selected sampling method for the tourists. In a purposive sample, the sampling units are selected subjectively in an attempt to obtain a sample that appears to be representative of the population (Frankfort-Nachmias & Nachmias 2005). The surveyors went to the MIA and selected potential participants from different age groups and genders, who were willing to answer the questionnaire.

In cases when people declined to participate, the surveyors were instructed to select another participant. In cases when participants were couples or were in groups, the surveyor had to select one person who would respond to the questionnaire.

*Semi-structured interviews*

Thirty-four semi-structured interviews were conducted for Maltese residents and tourists (17 interviews for each group). With regard to transport professionals, 11 interviews were conducted. Qualitative sampling works with small population samples and does not seek statistical significance (Miles & Huberman 1994). In the case of Maltese residents, snowball sampling was conducted, and tourists were intercepted in the street.

The Maltese resident participants were contacted through initial contacts. The initial contacts were the researcher's personal contacts who were acquainted with people from different segments of society. The tourist participants were intercepted in three localities popular with tourists in Malta (Valletta, St Julian's/Sliema area and St Paul's Bay). Transport professionals were sent an e-mail or contacted by phone.

In both cases, care was given to balance the gender and age groups, although in the case of the Maltese participants, it was more difficult since contact relied on the initial contacts, and in the case of tourists, the researcher depended on who was available.

### 5.4.7 Data Collection Process

*Questionnaires*

In all, four sets of questionnaires were collected. These included pre-reform Maltese residents and tourists and post-reform Maltese residents and tourists. For the Maltese residents dataset, 400 questionnaires were collected each time. Participants were the first person to answer the telephone. The 100% response rate was only possible because of the use of the strike rate approach. When surveyors found lack of cooperation from potential participants alternative participants were selected randomly. It is estimated that in the pre-reform, as well as the post-reform data collection processes around 68% of participants who were initially contacted were not willing to participate.

In the case of pre-reform tourists, 400 questionnaires were collected, and 399 were collected post reform, as one of the surveyors had lost one of the questionnaires. This incident happened on the last day on which there was an agreement with the MIA to conduct the questionnaires. Thus, it was felt that going through the permit process once again to collect one questionnaire would have been unnecessarily complicated.

Questionnaires with missing information, which was mostly regarding age groups, were removed. The final number of questionnaires available for analysis was 390 pre-reform Maltese residents, and 398 post-reform. The tourist datasets final amount was 400 pre-reform and 399 post-reform.

Maltese are bilingual. Hence, the questionnaires with Maltese residents were conducted either in Maltese or in English. In the case of tourists, the questionnaires were conducted in English.

Once the questionnaire data had been collected, they were inputted into Microsoft Excel. The inputted, cleaned, and sorted data were then imported into SPSS (IBM Corp. 2013). Relevant coding was assigned to each answer of the questionnaire.

*Semi-structured interviews*

The interviews followed the COREQ (consolidated criteria for reporting qualitative research) checklist. This is a 32-item checklist used by researchers to report the methodology used for this type of qualitative analysis (semi-structured interviews) (Tong et al. 2007). Appendix G shows the filled in checklist.

The researcher conducted the interviews face-to-face, which was a time-consuming process. The Maltese residents and tourists' interviews were collected between July 2014 and October 2014.

The interviews with transport professionals were also started in July. This process took longer than with the other population groups; the last interview was conducted in January 2015.

The interviews for Maltese residents were conducted at different times of the day and in different locations. It was important that the interviewees felt comfortable in the environment in which they were doing the interview. Hence, the times and locations were according to their preferred choice. Interviews with tourists were conducted on weekdays and weekends, in the mornings and afternoons, while the interviews with transport professionals were conducted in their offices on weekdays.

The interviews with Maltese residents and transport professionals were carried out either in Maltese or English, depending on how comfortable the participant felt in answering the question. The interviews with the tourists were mainly in English, but one of them was conducted in Italian, and another was a mix of languages between English and German.

All the transport professionals happened to be Maltese. Hence, the interviews were in Maltese or English.

Each interview was recorded and then transcribed. Atlas.ti version 6.2 (Atlas.ti 2013) was used for the analysis. An interview of thirty minutes involved a day of transcribing.

## 5.5 Sample Characteristics

### 5.5.1 Questionnaires

*Geo-demographic characteristics - Maltese Residents*

Chapter 4, section 4.2, indicated that gender is equally balanced in Malta. However, Table 5.4 shows that the pre-bus service reform dataset had 5% fewer males and 5% more females than the national data (45% males and 55% females).

Furthermore, in the questionnaire conducted post-reform, there was a disparity in the gender distribution; 33% of the participants were males and 67% were females. The under representation of males in this dataset could be because females tend to answer the telephone more than males do (Quinn et al. 1980).

The population pyramid in Chapter 4, Figure 4.4, shows an ageing population. Table 5.4 shows the age groups of the questionnaire participants before and after the reform. In both instances, older people formed the highest percentage of the participants. These percentages could be a representation of the national data, but could also be a bias. Older people might stay at home more than the working population, so they might be more likely to be available to answer questionnaires (Krosnick 1999).

Regarding occupation, the highest percentages were housekeepers for both the pre-and post-reform. As described in Chapter 4, sub-section 4.4.1, housekeepers in Malta tend to be women. Hence, since they spend most of the time at home, it is more likely that they will answer the phone.

The questionnaires were collected in granular format by locality. Once data were collected, these were grouped into the six districts that form Malta.

The geographic distribution of the sample population indicates that for most of the participants, their district of origin was the Northern Harbour District (30% pre-bus

service reform, and 31% post-bus service reform), followed by the Southern Harbour District (20% in each instance of the bus service reform). This distribution is representative of the national data; as discussed in Chapter 4, sections 4.1 and 4.2, most settlements, and most of the population are located in these two districts.

Table 5.4 Demographic Characteristics of Maltese Residents before and after the reform

| | | **National Data Census (2011)** (Population = 416,055) % | **Pre-Bus Service Reform (2011)** (n=390) % | **Post-Bus Service Reform (2012)** (n=398) % |
|---|---|---|---|---|
| **Gender** | *Male* | 50 | 45 | 33 |
| | *Female* | 50 | 55 | 67 |
| **Age Groups** | *11-20* | 13 | 9 | 7 |
| | *21-30* | 15 | 16 | 8 |
| | *31-40* | 13 | 22 | 14 |
| | *41-50* | 13 | 21 | 17 |
| | *51-60* | 14 | 9 | 17 |
| | *60+* | 21 | 23 | 36 |
| **Occupation** | *Housekeeper* | n/a | 28 | 33 |
| | *Retired* | 9 | 12 | 25 |
| | *Professional* | 10 | 12 | 12 |
| | *Service worker* | 2 | 12 | 8 |
| | *Student* | 11 | 11 | 6 |
| | *Elementary occupation* | 3 | 8 | 3 |
| | *Craft* | 4 | 7 | 3 |
| | *Clerk* | 2 | 6 | 6 |
| | *Unemployed* | 6 | 6 | 4 |

Question 4 in the Maltese residents' pre- and post-questionnaires required participants to indicate the locality to which they travel most frequently either for work (in the case of employed persons) or for errands/school in the case of the non-working population.

The destination of the participants before the bus service reform was highest in the Northern Harbour District (33%), followed by the Southern Harbour District (31%). After the bus service reform, this changed to 38% in the Southern Harbour District and 31% in the Northern Harbour District. Most travelling takes place within the Grand Harbour conurbation.

*Geo-demographic characteristics - Tourists*

The questionnaire data are representative of the tourist population by gender (Table 5.5). National data show that in 2011, 53% were males and 47% were females (Malta Tourism Authority 2014), and in 2012, 52% were males and 48% were females (Malta Tourism Authority 2015).

Table 5.5 Demographic Characteristics of Tourist Participants before and after the Bus Reform

| | | **Pre-Bus Service Reform (2011)** (n=400) % | **Post-Bus Service Reform (2012)** (n=399) % | **National data Tourists 2012** (n=1,443,414) % |
|---|---|---|---|---|
| **Gender** | *Male* | 50 | 55 | 52 |
| | *Female* | 50 | 45 | 48 |
| **Age Groups*** | *11-20* | 14 | 20 | (0-24) 20 |
| | *21-30* | 19 | 32 | (25-44) 31 |
| | *31-40* | 22 | 18 | |
| | *41-50* | 23 | 14 | (45-64) 35 |
| | *51-60* | 9 | 8 | |
| | *60+* | 14 | 8 | (65+) 14 |
| **Reason for Visiting** | *Holiday* | 68 | 78 | 85 |
| | *Business* | 14 | 5 | 8 |
| | *Education* | 12 | 16 | (incl. education) |
| | *Other* | 6 | 2 | 7 |
| **Accommodation** | *5 Star Hotel* | 18 | 13 | 26 |
| | *4 Star Hotel* | 23 | 25 | 42 |
| | *3 Star Hotel* | 24 | 24 | 22 |
| | *Guest House* | 11 | 3 | |
| | *Host Family* | 9 | 10 | 9 |
| | *Other* | 15 | 25 | |
| **Length of Stay** | *1-3 nights* | 17 | 4 | |
| | *4-7 nights* | 42 | 42 | |
| | *8-14 nights* | 26 | 33 | 7.7 |
| | *15-21 nights* | 8 | 8 | |
| | *21+ nights* | 7 | 14 | |

*For national data the age groups are provided differently (as indicated in brackets) from how the data was collected in the surveys.

The survey results indicate that most of the tourist participants formed part of the age groups ranging from 21-50 during both the pre- and post-reform scenarios. When compared to the national data, Figure 5.6 indicates that the most common age groups are between 25 and 64.

The questionnaire results indicate that most of the accommodations in which the tourist participants stayed were mostly situated in the Northern Harbour (pre-reform: 42%; post-reform: 41%), and the Northern Districts (pre-reform: 36%; post-reform: 44%). These results are representative of the national data. As explained in Chapter 4, section 4.1, the main tourist accommodation areas are in these two districts.

The questionnaire datasets indicate that tourists visit Malta mainly for a holiday (68% pre-reform, 78% post-reform). This information is representative of the national data. Tourists generally visit Malta for a holiday (77%), for business or professional reasons (8%), to visit family and friends (8%), or for other reasons, including learning English as a foreign language (7%) (Malta Tourism Authority 2015).

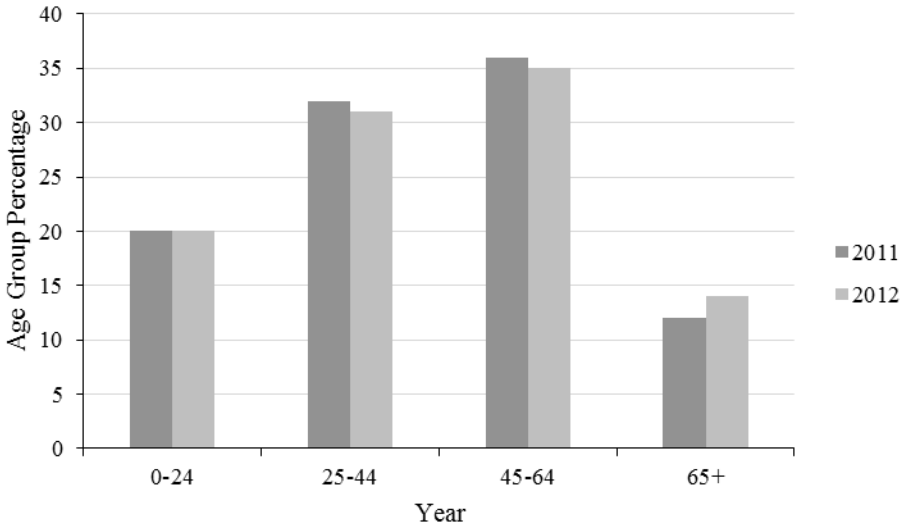


Figure 5.6 National Statistics - Tourist Age Group Percentages (2011-2012)

Source: Modified from Malta Tourism Authority (2013)

Tourist participants' accommodation was mainly distributed between 3-star and 4-star hotels (24% in both datasets for 3-star hotels, and 23% - pre-reform and 25% - post-reform). Additionally, the average length of stay for tourists both pre- and post-reform was 4-7 nights. National data show that the average length of stay for tourists was 7.5 and 7.7 nights in 2011 and 2012 respectively (National Statistics Office 2014c).

*Frequent mode used – Maltese Residents*

The questionnaire results indicate that before the bus service reform, 49% of the participants were car users, 31% were bus users, and 20% used other modes of transport. After the reform, 65% were car users and 33% were bus users. Users of other modes of transport made up only 3% of the sample population.

The questionnaire results are different from the national data because they show more bus users. Nevertheless, the increase in car use evidenced in the questionnaire reflects the national data (Transport Malta 2010b).

*Frequent mode used - Tourists*

Questionnaire data from before the reform indicate that bus use had the highest percentage 55% (hired car - 24%, other – 6%, private coaches – 15%). After the reform, tourists used mostly the bus (69%), which was followed by the various modes (hired car – 20%, other – 9%, and private coaches – 2%).

### 5.5.2 Semi-Structured Interviews

Table 5.6 illustrates the basic information about the Maltese resident interviewees. The code assigned to this group of participants was L*n*. Twelve females and five males participated, and the ages varied between the age groups 21-30 to 60+.

Table 5.6 Basic information regarding the interviewees – Maltese residents

| Code | Gender | Age | Occupation | Household Type | District of Origin | District Destination | Transport Mode Mostly Used | Car Owner |
|---|---|---|---|---|---|---|---|---|
| L1 | Female | 60+ | Housewife | Terraced House | Northern | Northern Harbour | Car | No |
| L2 | Female | 60+ | Retired | Flat | Northern Harbour | Western | Bus | No |
| L3 | Female | 60+ | Housewife | Maisonette | Western | Southern Harbour | Car | No |
| L4 | Male | 31-40 | Professional | Maisonette | Northern Harbour | Southern Harbour | Car | Yes |
| L5 | Female | 31-40 | Professional | Penthouse | Northern | Southern Harbour | Car | Yes |
| L6 | Female | 31-40 | Professional | Terraced House | Southern Harbour | Northern Harbour | Car | Yes |
| L7 | Female | 21-30 | Service workers | Maisonette | Western | Western | Car | Yes |
| L8 | Female | 51-60 | Clerks | Maisonette | Western | Southern Harbour | Car | Yes |
| L9 | Male | 31-40 | Professional | Flat | Northern Harbour | Southern Harbour | Bus | No |
| L10 | Female | 60+ | Retired | Maisonette | Northern Harbour | Northern Harbour | Bus | No |
| L11 | Female | 31-40 | Professional | Maisonette | Southern Harbour | Southern Harbour | Bus | Yes |
| L12 | Male | 41-50 | Professional | Terraced House | Southern Harbour | Southern Harbour | Bus | Yes |
| L13 | Female | 60+ | Retired | Maisonette | Northern Harbour | Northern Harbour | Car | No |
| L14 | Female | 60+ | Retired | Maisonette | Northern Harbour | Northern | Bus | No |
| L15 | Male | 31-40 | Professional | House of Character | Southern Harbour | Southern Harbour | Car | Yes |
| L16 | Male | 60+ | Retired | Maisonette | Northern | Northern | Bus | Yes |
| L17 | Female | 60+ | Technicians & associate professionals | Flat | South Eastern | Northern Harbour | Bus | Yes |

Travelling generally took place between the Northern Harbour and Southern Harbour districts. Four bus users were car owners. Participants L5, L6, and L15 were bus users before the reform, but changed to car use after the implementation of the reform.

Table 5.7 shows the basic information about the tourist participants. The code assigned to tourists was T*n*. Gender was quite balanced, with nine males and eight females. Age groups varied between 21-30 and 60+. Nine participants were visiting Malta for a holiday, and eight were return tourists.

All the tourist participants were bus users. The tourists' accommodation was either in the Northern Harbour or in the Northern Districts. Six participants stayed in Malta between 4-7 nights, another six stayed 21+ nights, one stayed 8-14 nights, and four stayed 15-21 nights. Eight participants stayed in self-catered apartments, one stayed in a 4-star hotel, four in a 3-star hotel, one at a friend's house, another one with a host family, and another one in a hostel.

Table 5.7 Basic information regarding the interviewees – Tourists

| Code | Gender | Age | Reason for Visiting | Been to Malta before 2011 | Mode Use | Length of Stay | Type of Accommodation | District of Accommodation |
|---|---|---|---|---|---|---|---|---|
| T1 | Male | 21-30 | Business | Yes | Bus | 21+ nights | Self-Catered Apartment | Northern |
| T2 | Male | 21-30 | Holiday | Yes | Bus | 8-14 nights | Friends' House | Northern |
| T3 | Female | 21-30 | Business | Yes | Bus | 21+ nights | Self-Catered Apartment | Northern |
| T4 | Female | 21-30 | Education | No | Bus | 21+ nights | Host Family | Northern |
| T5 | Male | 21-30 | Business | No | Bus | 21+ nights | Self-Catered Apartment | Northern Harbour |
| T6 | Male | 41-50 | Business | No | Bus | 15-21 nights | Self-Catered Apartment | Northern Harbour |
| T7 | Female | 31-40 | Holiday | No | Bus | 4-7 nights | 3-Star Hotel | Northern Harbour |
| T8 | Male | 21-30 | Holiday | No | Bus | 4-7 nights | 3-Star Hotel | Northern Harbour |
| T9 | Female | 60+ | Holiday | No | Bus | 4-7 nights | 3-Star Hotel | Southern Harbour |
| T10 | Female | 21-30 | Holiday | No | Bus | 4-7 nights | Hostel | Northern Harbour |
| T11 | Male | 51-60 | Holiday | Yes | Bus | 4-7 nights | Self-Catered Apartment | Southern Harbour |
| T12 | Male | 60+ | Holiday | Yes | Bus | 4-7 nights | 3-Star Hotel | Northern Harbour |
| T13 | Male | 31-40 | Holiday | No | Bus | 15-21 nights | Friends' House | Northern |
| T14 | Female | 60+ | Holiday | Yes | Bus | 15-21 nights | 4-Star Hotel | Northern |
| T15 | Female | 51-60 | Holiday | Yes | Bus | 15-21 nights | Self-Catered Apartment | Northern |
| T16 | Male | 21-30 | Education | No | Bus | 21+ nights | Self-Catered Apartment | Northern Harbour |
| T17 | Female | 60+ | Holiday | Yes | Bus | 21+ nights | Self-Catered Apartment | Northern |

The transport professionals, who hailed from the Maltese transport industry, included operators, regulators, drivers, and policy makers. The code assigned to transport professionals was E*n*.

## 5.6 Analytical Techniques

### 5.6.1 Questionnaires

For questionnaire data, Pearson Chi-Squared tests ($X^2$) (Pearson 1900) (Equation 5.1) are used to test for any dependences between the variables, linked with intentions, and with attitudes and perceived confidence. Attitudes towards the bus service quality are measured using Factor Analysis. Unless otherwise stated, statistical analysis are tested with a confidence interval of 95% (Frankfort-Nachmias & Nachmias 2005).

$$X^2 = \sum \frac{(O - E)^2}{E}$$

Equation 5.1 Chi-Square ($X^2$) test

*Factor Analysis*

Factor Analysis is an interdependence technique to define an underlying structure among the variables (Hair et al. 2014), in this case, the pre-defined eight service quality characteristics – accessibility, information, time, fare, customer care, comfort, security, and impact on the environment. This underlying structure reveals patterns from the variables (Gie Yong & Pearce 2013). The flowchart (Figure 5.7) shows the line of thought for selecting the type of Factor Analysis applied in this research.

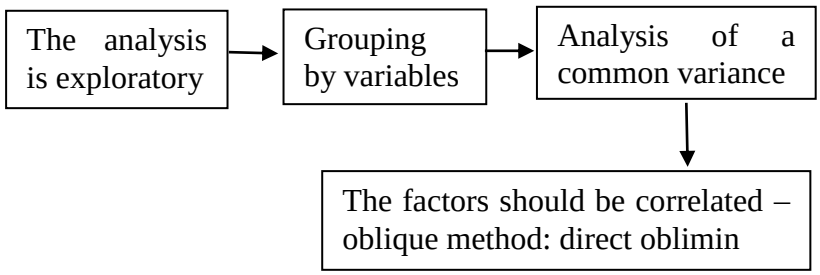


Figure 5.7 Flowchart for selecting the Factor Analysis

Adapted from Hair et al. 2014.

The assumption is based on the literature regarding service quality characteristics that influence bus use; hence, a degree of correlation between the eight variables should exist. The common variance identifies underlying dimensions (the latent variables) that

reflect the similarities of the variables (Hair et al. 2014). Since it is assumed that the service quality characteristics are correlated to the oblique rotation, direct oblimin was chosen to analyse the data (Tabachnick & Fidell 2014).

The data were tested for reliability using the Cronbach's alpha coefficient, which assesses the consistency of the scale (Hair et al. 2014). The guidelines for interpreting the results are available in Appendix H (Tables H.1 and H.2).

Factor Analysis produced output variables using the regression method (because the assumption is that there are correlations) for each questionnaire participant, allowing further analysis. Nonmetric data describe differences in type by indicating the presence or absence of a characteristic (Hair et al. 2014).

The data for age, gender, and mode use were then analysed using the Kruskal-Wallis (Kruskal & Wallis 1952) and Mann-Whitney U tests (Mann & Whitney 1947), as shown in Table 4.2. This is possible because data for attitudes here are considered as ordinal.

Kruskal-Wallis tests ensure genuine confidence in significance of results (Field 2009). The limitation with the Kruskal-Wallis test, however, is that it does not indicate where the differences are. Hence, the Mann-Whitney U test was used as a post-hoc test to identify any differences that were not specified a priori (Berman Brown & Saunders 2008).

*Multinomial Logistic Regression*

Multinomial Logistic Regression (MNL) (Equation 5.2) is useful to identify patterns in data that have a dependent variable with more than two categories. In this case, the dependent variable is mode use, which for the Maltese residents had three categories (cars, buses, other). The tourist datasets had four categories (private coaches, hired cars, buses, other).

$$log_e \frac{p_x}{p_y}$$

Equation 5.2 MNL ratio

In this research, MNL is used to identify patterns of a categorical dependent variable, specifically, mode use, has on the basis of categorical independent variables (e.g., 'occupation', and 'district origin'). This is performed to:

i. determine the effect size of the independent variables on the dependent variable
ii. rank the relative importance of the independent variables
iii. assess the interaction effects
iv. understand the impact of covariate control variables (Garson 2014).

In MNL, the values of the parameters are estimated using maximum likelihood estimation. This estimation selects coefficients that make the observed values most likely to have occurred (Hair et al. 2009). When interpreting the model, the likelihood ratio (-2LL) is generally preferred. In general, the model becomes better when the likelihood ratio decreases in magnitude. A well-fitting model is significant at the 0.05 level or better (Agresti 2007, Garson 2014).

The MNL models were developed based on three assumptions (Field 2009), as follows:

i. Linearity: in MNL, the outcome is categorical, so the assumption that predictors form a linear relationship is violated. This assumption can be tested by looking at whether the interaction term between the predictor and its log transformation is significant (Hosmer et al. 2013)
ii. Independence of errors: the cases of data should not be related; for instance, one cannot measure the same people at different points in time. In this case, the research is a cross-sectional study, which solves the problem.
iii. Multicollinearity: predictors should not be highly correlated. Such predictors were not included in the models.

For this study, a Forward Stepwise MNL was selected to determine the effect size of the independent variables on the dependent variable. This procedure determines the forward

entry of a variable, and then alternates between backward elimination and forward entry. It adds variables one at a time by the preferred criterion, namely, the log likelihood ratio (-2LL). The log likelihood determines whether the predictor variables included in the model provide a good fit to the data (Cramer & Howitt 2004). The elimination procedure continues, until all variables that fail to meet the entry and removal criteria are excluded from the model (Tabachnick & Fidell 2007).

Another criterion that helps select a good model in stepwise methods is the Akaike information criterion (AIC). Low values of AIC indicate a good fit (Agresti 2007, Field 2009). The optimal model is one that has its fitted values closest to the true outcome probabilities (Agresti 2007).

To perform the forward stepwise model, some options were assigned in SPSS (IBM Corp. 2013). These included the dispersion scale based on the deviance function, which is the likelihood-ratio chi-square. This scale corrects the estimate of the parameter covariance matrix. The stepwise options included an entry probability of 0.05, using the likelihood ratio as the entry test. The removal probability is 0.1, using the likelihood ratio as the removal test. The difference in the significance levels is necessary because the alternating process chooses the least significant variable to be dropped, and then re-considers the previously dropped variables for re-introduction in the model (Brant 2004). The maximum stepped effect specifies the maximum number of terms to include in the model (SPSS Inc. 2007). This was set as 20, which is the recommended value (Field 2009).

Once the best model is selected based on the above criteria, it is assessed to see whether the model fits the observed data well. Residuals indicate whether there are outliers in the data. Another method to test the model is to see if it is influenced by a small number of cases (Agresti 2007, Field 2009, Hair et al. 2014).

To assess residuals, the standardized residual and studentized residual statistics are used. Standardized residuals are the residuals divided by an estimate of their standard deviation. Studentized residuals have the same properties as the former, but provide a more precise estimate of the error variance. If a model fits the sample data well, all

residuals will be small (Cook & Weisberg 1982, Field 2009). If more than 5% of cases have standardised residuals with an absolute value greater than 1.96, the model represents poorly the actual data. If more than 1% of the standardised residuals have an absolute value greater than 2.58, the model is a fairly poor fit of the sample data (Field 2009).

To assess whether a small number of cases exert undue influence on the model, the following two influence statistics are used, namely, Cook's distance, DFBeta, and leverage statistics (Field 2009). Cook's distance is a measure of the overall influence of a case on the model. Values greater than 1 cause concern (Cook & Weisberg 1982). DFBeta provides the difference between a parameter estimated using all cases and estimated when one case is excluded. DFBeta is calculated for every case, and for each of the parameters in the model, it should be less than 1 (Field 2009). Leverage gauges the influence of the observed value of the outcome variable over the predicted values. Leverage values can lie between 0, no influence, and 1, complete influence over prediction (Field 2009).

*Content Analysis*

The open-ended questions were analysed using a Computer Aided Qualitative Data Analysis Software (CAQDAS) Atlas.ti version 6.2 (Atlas.ti 2013). This procedure involved going through the text and highlighting the main themes. Statements were the basic units of analysis, and the themes were pre-defined to follow the eight service quality characteristics. However, some of the themes were unrestricted, for instance, 'expectations'.

In content analysis, the themes are counted to identify the number of times the codes are mentioned by the participants (Hsieh & Shannon 2005). Figure 5.8 shows a screenshot of a sample of the themes assigned to the open-ended questions to Maltese residents pre-reform.

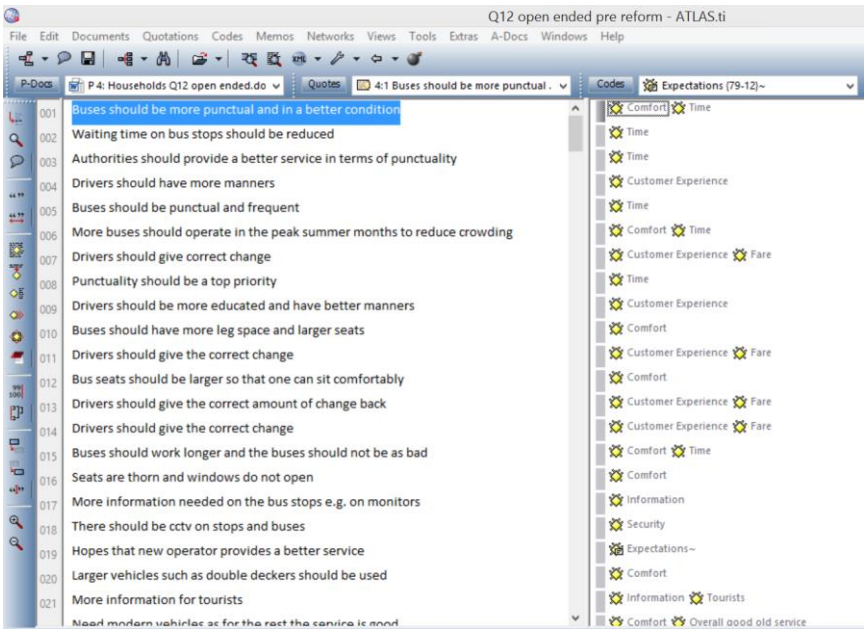


Figure 5.8 Screenshot sample of themes assigned to content analysis.

### 5.6.2 Semi-Structured Interviews

*Discourse Analysis*

Discourse analysis reveals hidden aspects that text alone cannot reveal, such as social actions (Jacobs 1999). It examines communication to gain new insights (Hewitt 2009), and is characterised by four common elements, as explained in Table 5.8.

The elements described in Table 5.8 indicate that discourse analysis views the research in the context of where it takes place ”socially, culturally and historically” (Sharp & Richardson 2001 p. 194). Consequently, as defined by Jacobs (1999), the ‘truth’ mentioned in Chapter 2, sub-section 2.7.3, is the acceptance of a number of alternative constructions of a logical and consistent explanation of events (Sharp & Richardson 2001, Burr 2006). To find out what people really mean, one has to understand the ‘truth’ that can only be reached through discourse, so it becomes the object of analysis (Jorgensen & Phillips 2002). This is what the analytical method adopted for the interviews aimed to do – to analyse the discourse to identify the ‘truth’ about the reform as discussed by the stakeholders.

Table 5.8 The four common elements of discourse analysis

| **Element** | **Meaning** |
|---|---|
| A critical stance towards taken-for-granted knowledge | We need to be careful even of our assumptions in empirical research, because they might not be as objective as we perceive |
| Historical and cultural specificity | The ways in which we understand the world are historically and culturally specific |
| Knowledge is sustained by social processes | People construct knowledge between them, through their daily interactions in the course of social life. This is how our versions of knowledge become fabricated |
| Knowledge and action go together | Descriptions of the world sustain some patterns of social action and exclude others. These are negotiated understandings that can take different forms, depending on how society understands them |

Adapted from Burr 2006 p. 2-3

Discourse analysis is strong in revealing the role of language in the subject that is discussed, the embeddedness of language in practice, and the mechanisms in language by answering 'how' questions (Hajer & Versteeg 2005). In this research, discourse analysis takes a Foucauldian approach. This choice derives from the idea that the bus service reform is considered as an event that can make social change (in this case, modal shift), and the government had the power to implement this change (with the reform). The stakeholders, who shaped their attitudes and intentions, and who were influenced by the opportunities and their capabilities along with their perceived confidence, formed opinions about this change.

Additionally, they were influenced by normative beliefs, which depend on the three elements listed in Table 5.8 ('historical and cultural specificity', 'knowledge sustained by social processes' and 'knowledge and action go together'). On adopting the Foucauldian manner of thinking, the change, which is brought about by institutional power, potentially leads to knowledge to improve public transport policy (particularly related to the bus service in the context of this research).

Methods of discourse analysis vary, and there is no such thing as 'the method' (Jorgensen & Phillips 2002). The approach that should, however, be taken is "multiperspectival" (Jorgensen & Phillips 2002, p. 4). This means that philosophy,

theory, and method should be combined, and the researcher can adapt to different theories as is considered fitting to the study (Jorgensen & Phillips 2002). Given that this study follows the Foucauldian approach, there are three particular theories that follow this philosophy (Table 5.9).

In contrast to Potter and Wetherell's (1984) approach towards attitudes (Table 5.9), this research considers that although attitudes are individual, there are similar evaluations within and across different segments of society; therefore, attitudes are part of a larger system of meaning. Consequently, Potter and Wetherell's (1984) approach is not considered for this study.

Table 5.9 The three theories of discourse analysis that apply the Foucauldian approach

| **Theory** | **Short Description** |
|---|---|
| Laclau and Mouffe's Discourse Theory | • Discourse encompasses language and social phenomena.<br>• It explores how we create reality that appears objective and natural.<br>• Politics is the social organisation that is the outcome of continuous political processes. |
| Fairclough's Critical Discourse Analysis | • Discourse is a form of social practice.<br>• It is a dialectical relationship with other social dimensions.<br>• It is 'critical' because it aims to reveal the role of discursive practice in the maintenance of the social world, including the social relations that involve unequal relations of power. |
| Potter and Wetherell's Discursive Psychology | • It depends on the cognitive process, including thinking, perception and reasoning<br>• Utterances are oriented towards action in specific social contexts, and their meanings are context-dependent.<br>• It criticises attitude research that treats attitudes in an isolated state, and not as part of a larger system of meaning. |

Adapted from Jorgensen & Phillips 2002

Instead, this research adopts a combination of Laclau and Mouffe's discourse theory and Fairclough's critical discourse analysis (Table 5.9). Table 5.10 shows the tools

selected from the two types of methods used for the analysis of this research, and gives a definition of each and a hypothetical example from the case study.

Table 5.10 Tools used for the discourse analysis

| **Theory** | **Tools for Analysis** | **Definition of aspect** | **Hypothetical example** |
|---|---|---|---|
| Laclau & Mouffe Discourse Theory | Nodal Points | Privileged sign around which other signs are ordered | 'Reform' or 'bus' |
| Laclau & Mouffe Discourse Theory and Fairclough's Critical Discourse Analysis | Concepts of identity | Identity is revealed through discourse, it depends on the social context | For Maltese residents the car means convenience, whereas the bus means bad bus driver attitude or time wasted |
| Fairclough's Critical Discourse Analysis | Discursive practice | Use of text by different stakeholders | Tourists might refer to the bus as a green mode of transport, and Maltese resident car users might refer to the bus as a vehicle that causes congestion |
| Fairclough's Critical Discourse Analysis | Text | Tools used in the text, e.g., metaphors, modality (hesitant tone to express distance from statement), hedges (e.g., ,well, a bit, to moderate the statement to show low affinity), exaggeration of words, possible substitution of words | The reform was unsuccessful – well, maybe it failed a bit |

Adapted from Jorgensen & Phillips 2002

The procedure for the discourse analysis was as follows. Initially, it is essential to identify the general ideas, concepts and categories that emerge (Hajer & Versteeg 2005). Therefore, first, a thematic analysis was conducted to categorise statements by themes.

The next step was to go through the text and highlight the parts of the text that answered RQ4 (and the same procedure of discourse analysis was performed for transport professionals, RQ5). In this manner, the discourse analysis was set in the context of the study, thus avoiding digressions. Additionally, it helped to concentrate the text around the research question.

This was followed by the actual discourse analysis that used the tools of analysis listed and explained in Table 5.10. At the same time, the analysis highlighted discourse that was taken for granted, groupings by stakeholder, and comparisons. Figure 5.9 illustrates these four steps.

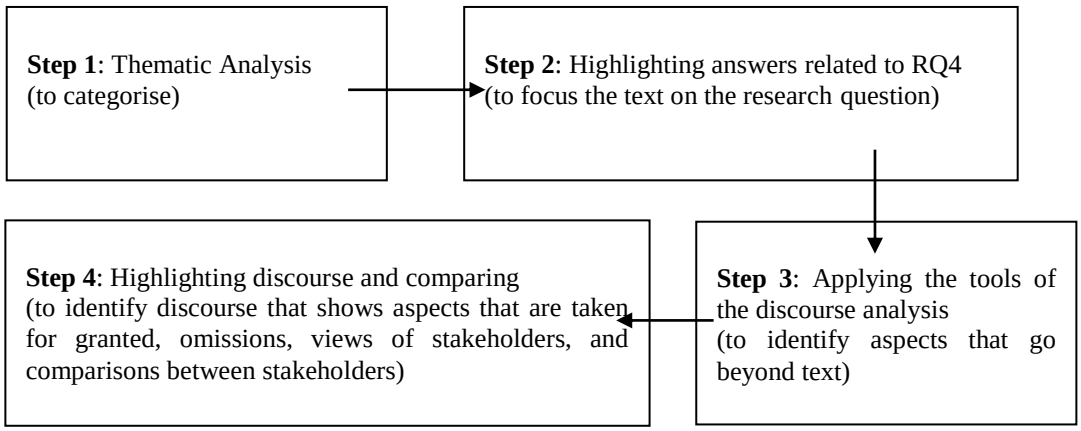


Figure 5.9 Four steps to implement the discourse analysis

The thematic analysis within the discourse analysis was performed using Atlas.ti version 6.2 (Atlas.ti 2013). This analytical method identifies recurring themes from data, but does not involve counting the contents (Braun & Clarke 2006). The themes are assigned through unrestricted coding, thus allowing an inductive approach to be used for interpreting the themes. This analysis helps categorise the text by theme. Phrases are selected as the basic unit of analysis for the level of detail for coding the themes. Thus, each unit (phrase) is coded with a theme. Figure 5.10 shows a sample of the procedure used to assign the themes.

This procedure was similar to the one used by Guiver (2007), who referred to the approach as ‘emic’ (using themes suggested by data rather than those determined by the researcher). Some of the categories that emerged, however, were already pre-defined, for instance, service quality characteristics adapted from the EN 13816 standardisation

(European Committee for Standardisation 2002), and other literature (e.g., Balcombe et al. 2004, Paulley et al. 2006, Eboli & Mazzulla 2007).

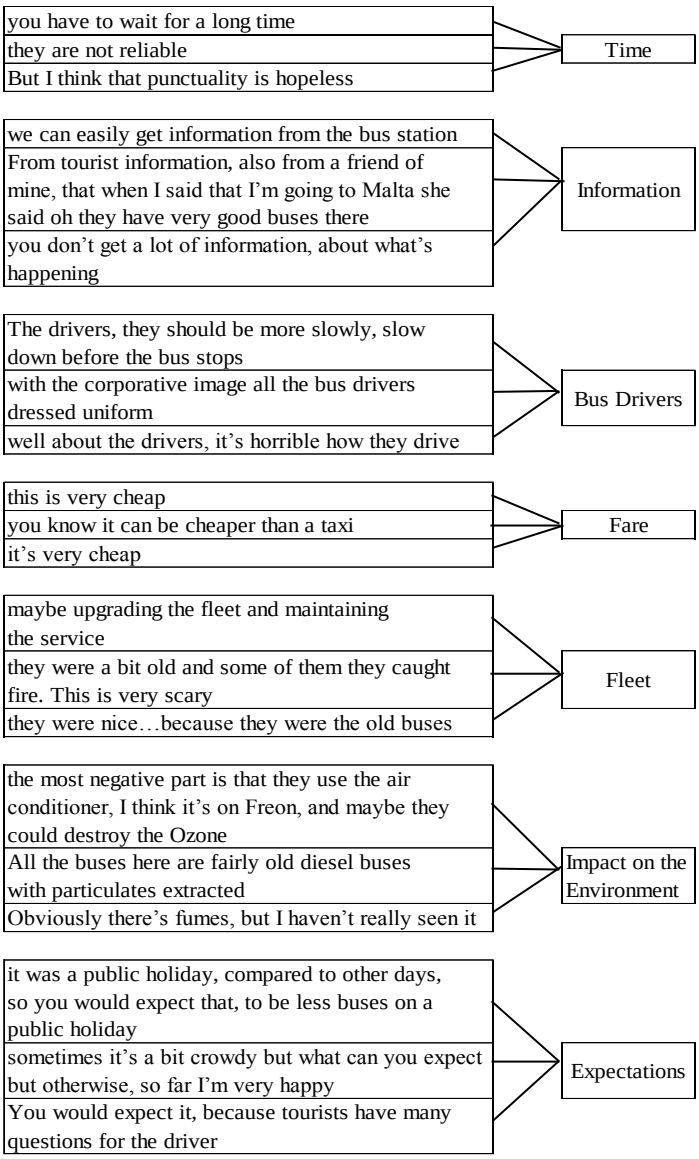

Figure 5.10 A sample of the procedure used to assign the themes

### 5.6.3 Institutions

*The Institutional Analysis Development (IAD) Framework*

The IAD framework approach provides a holistic, macro-level view of the policy process regarding the bus service in Malta. The analysis of institutions reveals three components: i) understanding people's use of institutional arrangements, ii) understanding the logic of institutional design, and iii) making informed proposals to improve institutional performance (Ostrom et al. 2014). This research analyses

institutions to understand two of these three components, specifically, the logic of their design and proposed improvements.

Institutions structure and define the relationship between actors and organisations (Rietveld & Stough 2004). The terms ‘institutions’ and ‘organisations’ are often used interchangeably. There is, however, a difference in their meaning. Organisations are, specifically, groups of actors that share a common interest or goal (Rietveld & Stough 2004). For example, Ostrom (1986) defined institutions as having a set of rules; these rules are defined by a political structure that creates positions, and manages these positional operations.

Two characteristics of rules are that they can be changed by humans and that they have a prescriptive force (having an element of accountability) (Ostrom 1986). This research refers to institutions as a set of rules, influenced by the political structure, characterised by a degree of responsibility, and involving changes. Organisations are considered as the products of institutions that implement decisions.

Institutional analysis involves understanding the working rules (the set of rules used to explain and justify actions) used in making decisions (Ostrom et al. 2014). The IAD framework uses seven classification rules, which are described in Table 5.11.

These seven configurations are compared against a set of four project classifications, as applied in Hijdra et al. (2015). The bus reform was essentially a government project, and for analytical purposes, it is considered as such. These four project classifications are agenda setting, programming, planning, and implementation. This helps to identify areas for improvement. Table 5.12 defines each classification, and Table 5.13 shows how each project classification is applied to the seven classification rules of the IAD framework.

Table 5.11 The seven classification rules used in the IAD framework

| Rule | Description |
|---|---|
| Boundary (Entry and exit) | Participants' attributes and resources, whether they can enter freely, and the conditions they must meet to leave |
| Position | Establish positions in the situation, e.g., designation of specialised tasks |
| Authority | Assigns sets of actions that participants in particular positions must, may, or may not perform |
| Scope | Delimits the potential outcomes that can be affected, and when seen in hindsight, linked to specific outcomes |
| Aggregation | Affects the level of control that a participant in a position exercises in the selection of an action, e.g., actions requiring agreement from other participants |
| Information | Affects participants' knowledge-contingent information sets |
| Payoff | Affects the benefits and costs that will be assigned to particular combinations of actions and outcomes; they establish the incentives and deterrents for action |

Adapted from Ostrom et al. 2014

Table 5.12 Project Classfication

| Project Classification | Definition |
|---|---|
| Agenda Setting | Process determined by accurate specifications of context and desired outcomes |
| Programming | Normative or descriptive sequence of phases or steps |
| Planning | Specific tactics or tasks to be completed within each phase of the project |
| Implementation | Generic activities either done in phases or at once |

Adapted from Boal & Bryson (1987) and Hijdra et al. (2015)

Table 5.13 Project classification as applied to the IAD framework rules (Hijdra et al. 2015)

| IAD framework classification rules | Agenda Setting | Programming | Planning | Implementation |
|---|---|---|---|---|
| Boundary | How actors enter/leave agenda/setting policy arenas, e.g., politicians, lobbyists, government officials | How actors enter/leave programming arenas, e.g., politicians, lobbyists, government officials | How actors enter/leave planning arenas, e.g., project members, permitting officals, project | How actors enter/leave project preparation/implementation arenas, e.g., contracting team, construction team, local |

| | | | | |
|---|---|---|---|---|
| | | | partners | stakeholders |
| Position | What do these actors want or need? How many have similar wishes? | What do these actors want or need? How many have similar wishes? | What do these actors want or need? How many have similar wishes? | What do these actors want or need? How many have similar wishes? |
| Authority | What policy actions do they take? | What programming actions do they take? | What planning actions do they take? Permitting process and intergovern-mental agreements play a role in this phase. | What preparation/imple mentation actions do they take? Design and contracting are important elements. |
| Scope | What is the result about? E.g., policy acts, guidelines | What is the result about? E.g., programming sequence | What is the result about? E.g., Environmental Impact Statement, inter-governmental agreements | What is the result about? E.g., technical design, construction contract, agreements with local stakeholders |
| Aggregation | How are decisions made? (voting/consensus/ ruling/negotiating) | How are decisions made? | How are decisions made? This determines options for negotiating/ trading for value. | How are decisions made? This determines options for negotiation/ trading for value. |
| Information | What information is, or must be shared among actors? | What information is, or must be shared among actors? | What information is, or must be shared among actors? In this phase, this determines the perception of transaction cost for value opportunities. | What information is, or must be shared among actors? In this phase, this determines the perception of transaction cost for value opportunities. |
| Payoff | How are benefits and costs distributed to actors in positions? | How are benefits and costs distributed to | How are benefits and costs distributed to | How are benefits and costs distributed to actors in |

| | | | | |
|---|---|---|---|---|
| | | actors in positions? | actors in positions? (Determines incentives to seize opportunities.) | positions? (Determines incentives to seize opportunities.) |

### 5.6.4 Public Transport Policy Analysis

*Policy Documents Evaluation*

Four policy documents were analysed (Table 5.14): two documents target public transport, and specifically refer to the bus while the other documents refer mostly to land use policy. Transport is included in the designated chapters.

Table 5.14 The four policy documents

| **Document** | **Authors** | **Institution** | **Year** | **Information** |
|---|---|---|---|---|
| Structure Plan of the Maltese Islands | British Consultants – Buchanan & Partners, Italian Consultants – General Progetti SpA, together with the Maltese Government | Planning Authority, later Malta Environment and Planning Authority (MEPA) | 1990 | The first Maltese planning and policy document that established the Planning Authority |
| Public Transport in Malta. A vision for public transport which fulfils public interest in the context of environmental sustainability | The Ministry for Infrastructure Transport and Communications (MITC) | Maltese Government, MITC | 2008 | First Maltese policy document that highlighted public transport related issues and indicated what should be done to improve these issues |
| Accessible Public Transport Infrastructure Policy, Design Guide | Transport Strategy Directorate, later the Integrated Transport Strategy Directorate | Transport Malta | 2009 | First Maltese policy document to establish procedures on the design of public transport (with specific reference to the bus) infrastructure |

| | | | | |
|---|---|---|---|---|
| Structure Plan for Environment and Development (SPED) | Malta Environment and Planning Authority (MEPA) | MEPA | 2015 | Supersedes the Structure Plan of the Maltese Islands |

These policy documents were analysed using Bardach's (2012) evaluative criteria. He listed five criteria: i) efficiency, ii) equality, equity, fairness, justice, iii) freedom, community, other ideas, iv) process values, and v) problem solution. Table 5.15 provides a description of each.

Table 5.15 Policy Evaluative Criteria

| **Criteria** | **Description** |
|---|---|
| Efficiency | Maximise public interest |
| Equality, equity, fairness, justice | A policy that is just |
| Freedom, community, other ideas | Includes free markets, economic freedom, freedom from government control, privacy, safety, security, absence of fear, equality of opportunity, equality of result, equality before law, empowerment of workers, and trust in others |
| Process values | Includes the process of information, consultation, and participation |
| Problem solution | Whether the policy solves the targeted problem to an acceptable degree |

Adapted from Bardach 2012

## 5.7 Limitations

Limitations deriving from this research include restrictions from the questionnaire population samples. Regarding Maltese residents, it is possible that the elderly and women answer the phone frequently, which could result in the high percentages shown in the sample characteristics, section 5.5.

With regard to the tourist questionnaires, purposive sampling can be subjective. Hence, the tourist population sample may be biased depending on the surveyors.

Similar to the tourist questionnaires, the interviews with tourists could be biased because this population group was intercepted in the street. The Maltese resident interview participants were determined by initial contacts. Initial contacts provide a link to people whom the original contacts know, and hence this non-probabilistic sampling technique is subjective.

The analysis performed on the policy documents can be subjective, depending on the researcher's views. Subjectivity can also be seen in discourse analysis. The interpretative nature of discourse analysis depends on the researcher, making it somewhat subjective (Jacobs 1999). Furthermore, interpretation may also be constrained by the researcher's focus on certain dominant types of language, leaving other text unintentionally unexplored (Feindt & Oels 2005).

This chapter concludes Part 2 of this dissertation. Part 3 – the Research Outcome, follows. The Research Outcome includes the analysis chapters, with each one dedicated to the research questions and the relevant parts of the proposed model, and the discussion and conclusion.

# Part 3 Research Outcomes

# Chapter 6 Exploratory Analysis

This chapter presents the initial findings from the questionnaires distributed to Maltese residents and to tourists before and after the reform. The findings refer to travelling characteristics, and the behavioural factors intentions, attitudes and expectations.

The questionnaire data included mainly quantitative data and some qualitative information obtained from open-ended questions. The latter were analysed using content analysis, and the results are presented here. The qualitative data add information to the numeric outcomes.

## 6.1 Travelling Characteristics

### 6.1.1 Maltese Residents

The data show that after the reform, car use increased, but bus use decreased. Car use increased by 5%, and bus use decreased by 5% (Figure 6.1). After the reform, the difference between car use and bus use was 32%, while before the reform this difference was 22%. These calculations exclude the mode 'other'. If the latter was included data would show that after the reform bus use increased by 2%, and car use increased by 16%. Pre-reform, the 'other' modes included motorbike (1%), on foot (16%), by bicycle (1%), and ferry (2%). Post-reform, the 'other' modes included 'on foot' (3%), possibly because elderly used the bus more because of the cheap fare, and female, and non-working participants relied more on the car, both as drivers and as passengers.

After the reform, Maltese resident car users increased their perceptions (+32%) that the average time taken to reach their destinations was 0-15 minutes. Figure 6.2 shows the perceived average time taken to reach destination by mode use and by reform period. The majority of the bus users perceived their average time taken to be from 31-60 minutes, before and after the reform. Post-reform, this perception increased by 1%.

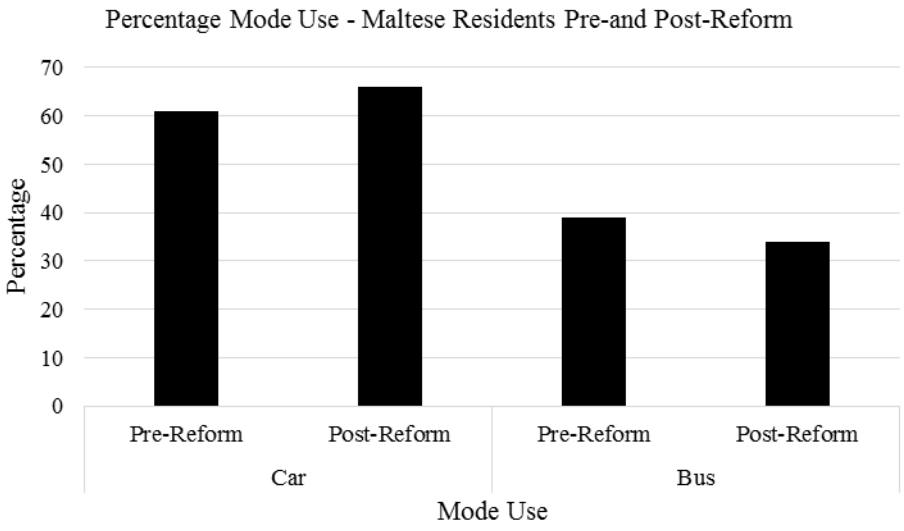


Figure 6.1 Percentage Mode Use – Maltese Residents Pre-and Post-Reform

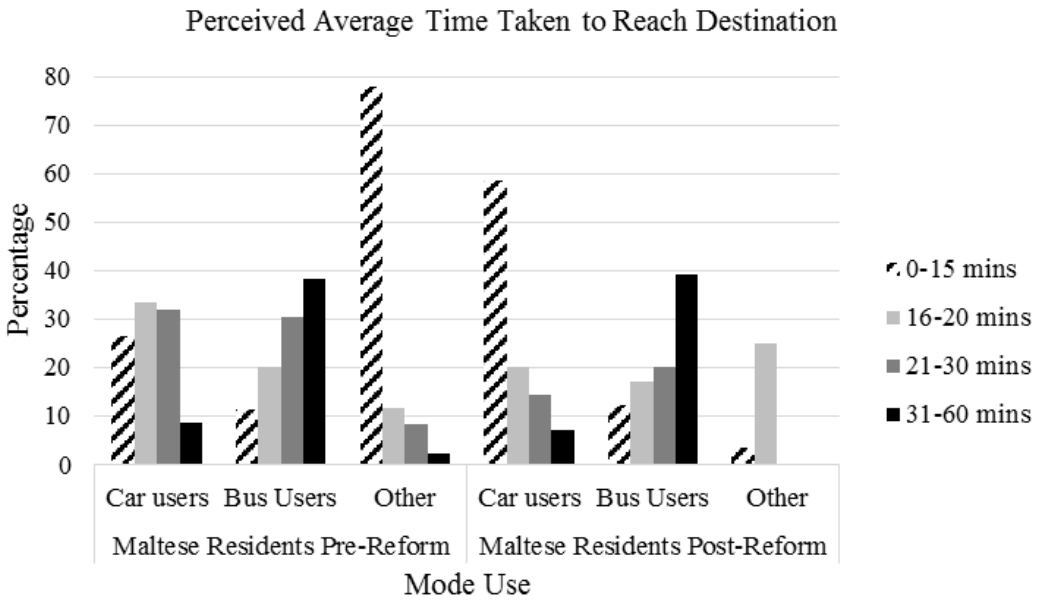


Figure 6.2 Perceived Average Time Taken to Reach Destination by Mode Use and Reform Period – Maltese Residents

### 6.1.2 Tourists

Before and after the reform, the majority of tourist participants were bus users (Figure 6.3). After the reform, bus use increased by 14%, and hired car use decreased by 4%.

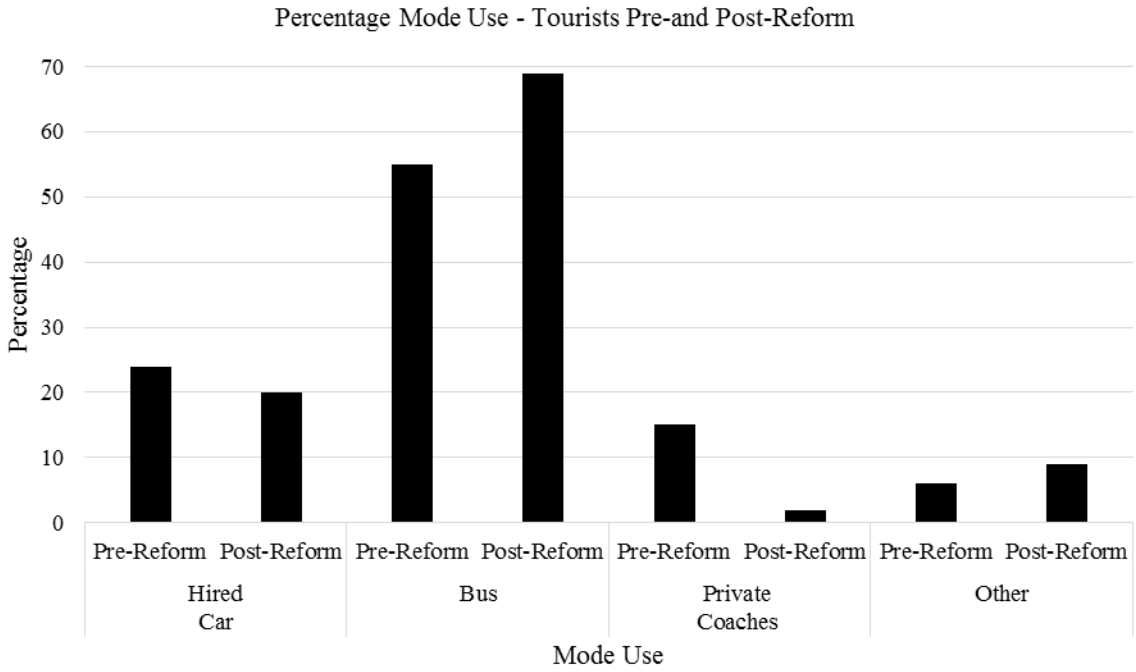


Figure 6.3 Percentage Mode Use – Tourists Pre-and Post-Reform

Perceived average time taken to reach destination by bus increased after the reform; post-reform, there was an 18% increase in tourists who selected the 31-60 minute option. Figure 6.4 illustrates the perceived average time taken to reach destination by mode use, pre-and post-reform.

Forty-seven percent of hired car users after the reform perceived the average time taken to reach their destination to be from 21-30 minutes (Figure 6.4). After the reform, this time range increased by 20%.

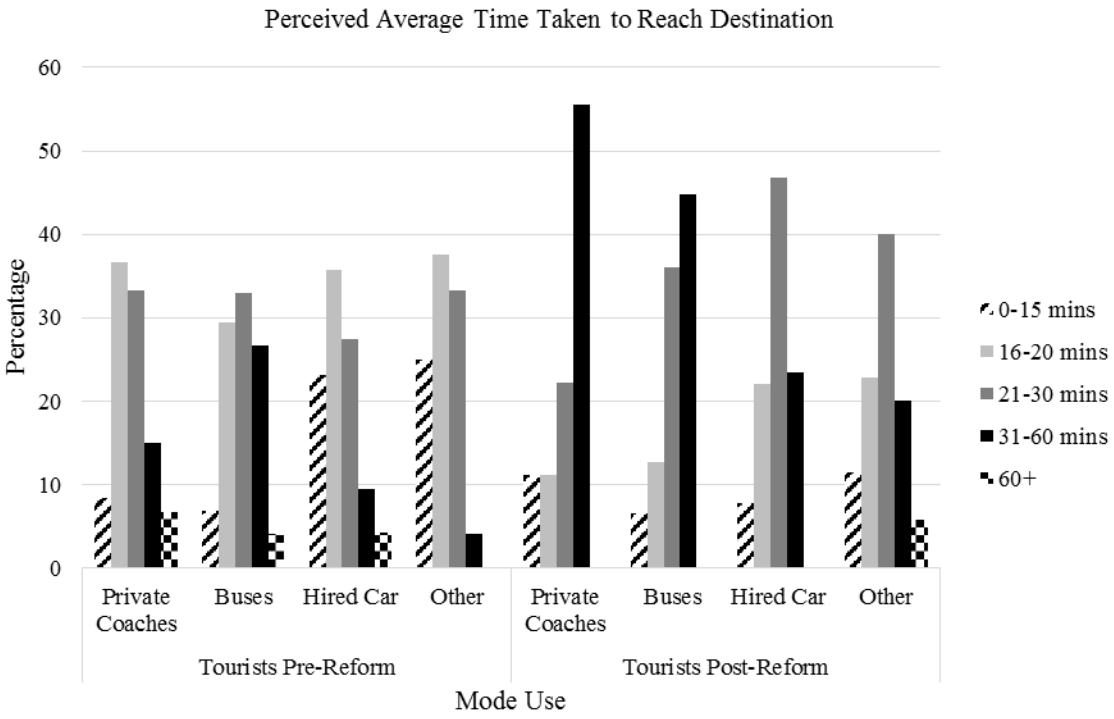


Figure 6.4 Perceived Average Time Taken to Reach Destination by Mode Use and Reform Period - Tourists

## 6.2 Intentions towards bus use

### 6.2.1 Maltese Residents

Figure 6.5 shows the percentage response rate of the participants' intentions to use the bus. Before the reform, 29% were already bus users; this increased to 31% after the reform.

After the reform, participants who considered using the bus increased by 1%. During the same time, participants who would not consider using the bus decreased by 4%.

The open-ended question linked with this question led to a variety of reasons why participants selected their answer. Figure 6.6 illustrates the reasons provided pre-and post-reform for intention to use the bus.

When providing reasons for their intention to use the bus, Maltese residents referred to some of the eight pre-defined bus service quality characteristics including

'accessibility', 'comfort', 'fare', 'time', 'security', 'customer care', and 'environment', which is related to 'impact on the environment'. 'Information' was the only exception, as the participants did not mention it.

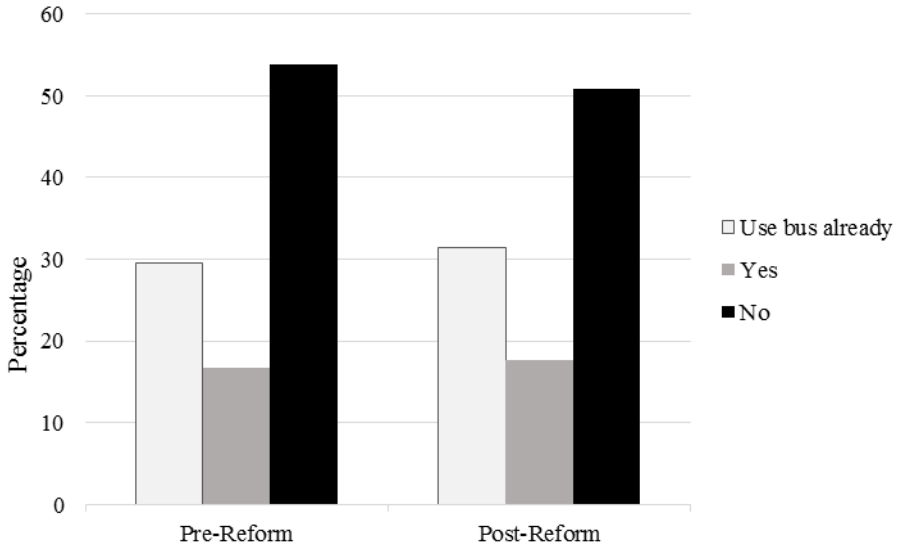


Figure 6.5 Intentions to use the bus – Maltese residents

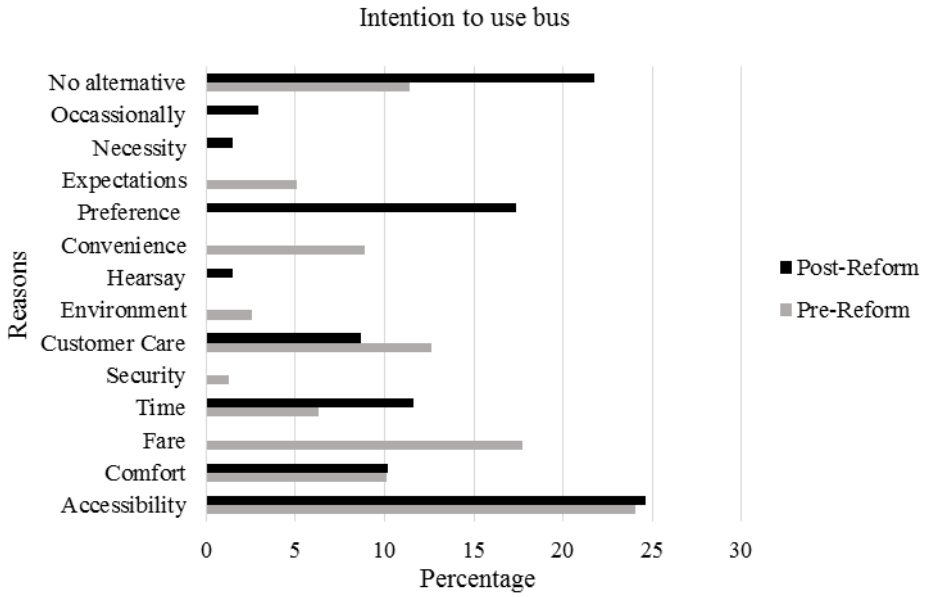


Figure 6.6 Reasons for intending to use bus – Maltese residents, car users

'Accessibility' was one of the reasons why participants would use the bus in the situations before and after the reform. The reasons suggest that some places, like Valletta, the capital city, are more accessible than other localities. This is because before the reform, Valletta was the main interchange of the bus service, and after the reform, it remained one of the main interchanges. Pre-reform responses included:

*To go to Valletta the best mode of transport is the bus, because of parking (Index 2101)*

whilst after the reform, responses included:

*I use the bus to Valletta. However, for short distances, the car is much better, as long waiting times exist (with the bus). (Index 1039)*

Before the reform, 5% of Maltese resident car users said that they had high expectations of the new bus service; therefore, they would consider using it. After the reform, 3% said that they would use it occasionally, and 1% said that they would use it if it were necessary.

It is interesting to note that although the Maltese resident participants before the reform said that they would use the bus, they stipulated that they would only be ready to do so on condition that the service had improved. This is evident from the 'if' used in their answers, such as:

*Fare: If it saves money, I will try it. (Index 2350)*

*Customer care: If the drivers change. (Index 339)*

This information resonates with the Public Attitudes Survey (PAS) (Malta Environment and Planning Authority, 2010), which showed that 75% of participants would be ready to use the bus service if it improved.

After the reform, 'time' (23%) was the main reason participants would not intend to use the bus service (Figure 6.7). Indeed, time-related issues influenced Maltese resident car users' intentions. The issues with punctuality, waiting times, and trip duration become evident here. Some of the expressions used by the participants were "*...too much waiting time"* (Index 3369) or *"...prefer...by car as it's less time-consuming than by bus"* (Index 103).

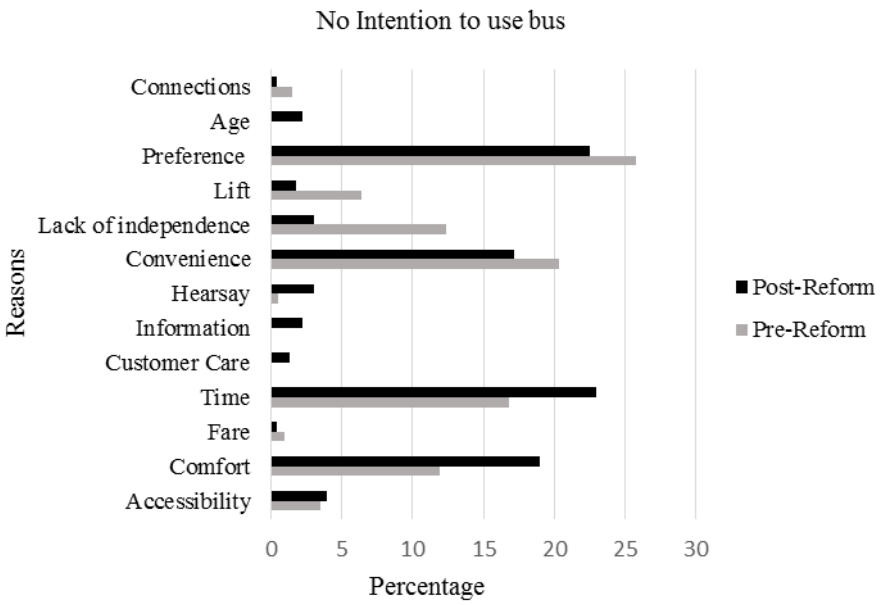


Figure 6.7 Reasons for not intending to use bus – Maltese residents, car users

Additionally, participants who after the reform would not use the bus because of 'comfort' stated that the car is more comfortable. This response suggests that, as discussed by Merriman (2009), car users seek comfort-related benefits.

Themes for not intending to use the bus that were unrestricted were 'preference' (26% pre-reform and 22% post-reform) followed by 'convenience' (20% pre-reform and 17% post-reform) (Figure 6.7). Furthermore, participants would not use the bus because they had access to a car as passengers with relatives and friends (6% pre-reform and 2% post-reform) (Figure 6.7). Other reasons included old age (2%) and negative hearsay (2%), with comments such as *"I hear too many complaints about the service"* (Index 923).

### 6.2.2 Comparisons of bus service delivery to intentions – Maltese Residents

Maltese residents after the reform thought the Arriva service was better than the service provided previously by the PTA. Participants were specifically asked to rate the statement: *"The new (Arriva) bus service is better than the old bus service"*. Figure 6.8 shows that there were more participants who answered between agree strongly (23%), agree moderately (20%), and agree slightly (28%), than those who answered disagree slightly (12%), disagree moderately (6%), and disagree strongly (9%).

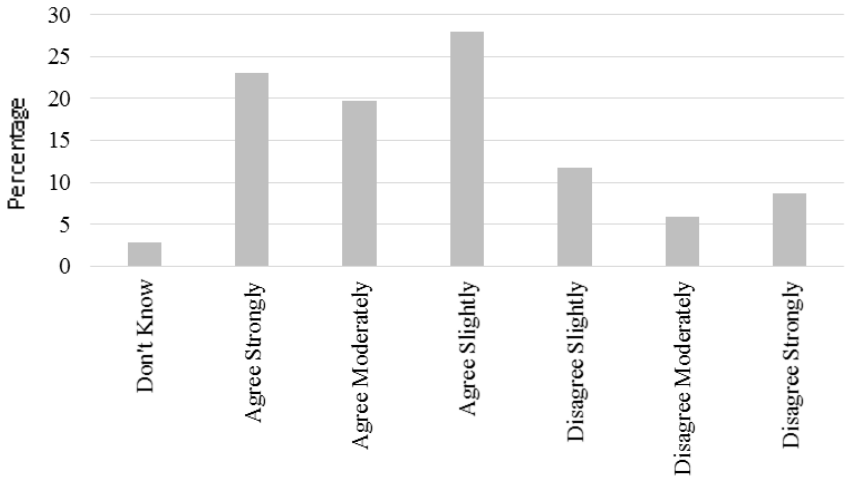


Figure 6.8 Percentage ratings on: Arriva service was better than the PTA service – Maltese Residents

Existing bus users said that the new bus service was better than the old service (24% agreed slightly) and 8% disagreed slightly (Figure 6.9). Participants who said that they were not interested in using the bus service after the reform agreed (strongly, moderately, and slightly) that the new service was better than the old service (Figure 6.9). This contradictory finding suggests that participants would still prefer not to use the bus. This possibly implies that intention to use the bus is influenced not only by an improved bus service.

The content analysis regarding the participants' opinion about the Arriva service compared to the PTA revealed reasons linked to the eight pre-defined service quality characteristics. The other factors were selected through unrestricted coding based on what the participants mentioned (Figure 6.10).

Figure 6.10 shows that 'comfort' was the most mentioned factor (23%), followed by 'time' (20%). Most of the participants thought that comfort was better with the Arriva service, because of the air-conditioning on board the buses; however, they thought that the PTA service was better than Arriva regarding time (Table 6.1).

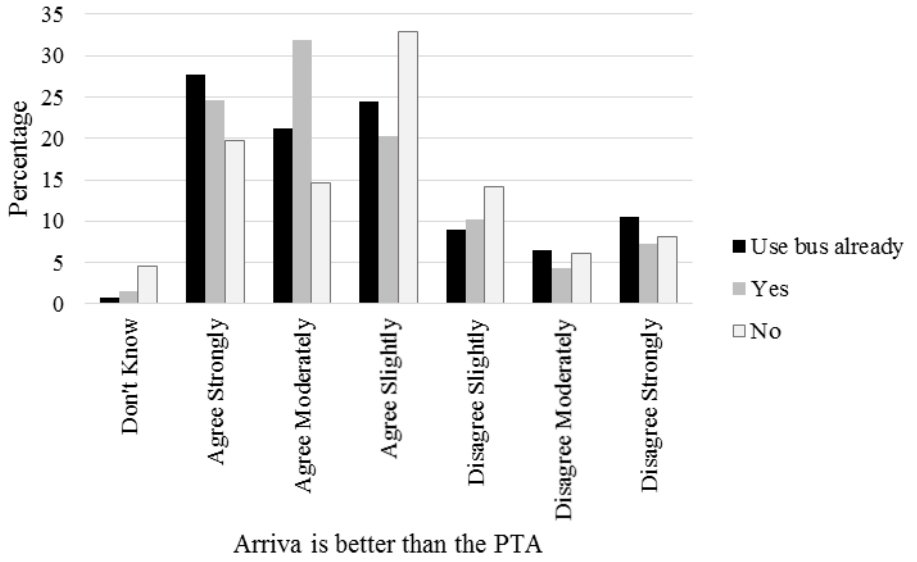


Figure 6.9 Percentage rating of the Arriva service when compared to the PTA service and intention to use the bus – Maltese Residents

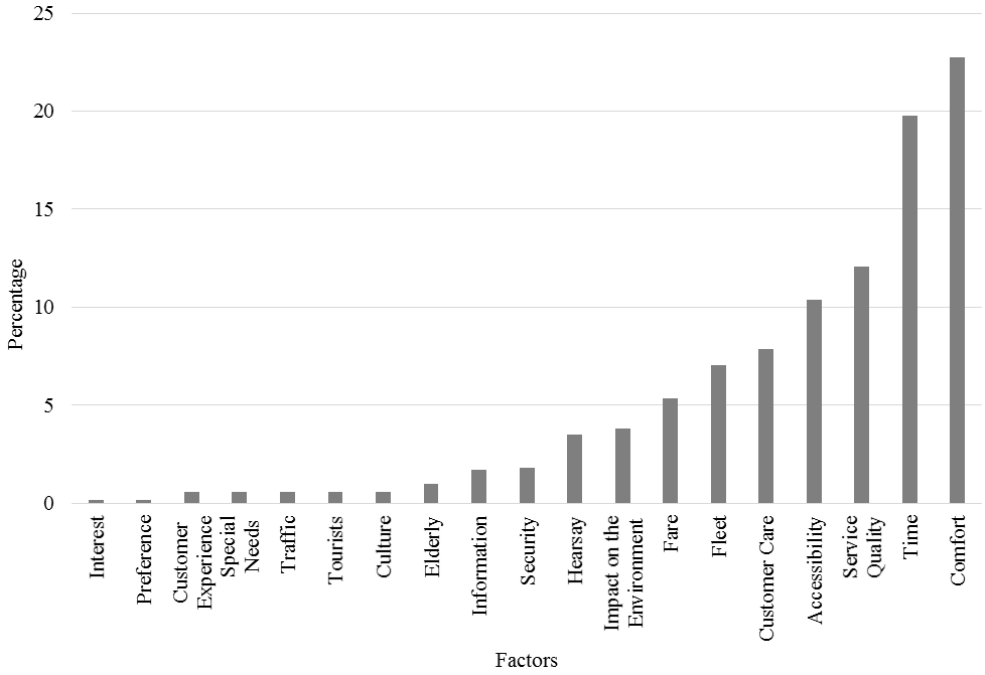


Figure 6.10 Percentage result of the content analysis on the Arriva bus service compared with the PTA bus service – Maltese Residents

In Figure 6.10 the factor 'service quality' referred to general references made by the participants regarding the bus service; this particularly included the need for more

improvement. ‘Accessibility’ (10%) and ‘customer care’ (8%) followed, but the comments regarding these two factors varied. At times, participants said that the routes were too long and go everywhere; in other instances, new routes were added, thus providing more opportunity to reach destinations. Participants commented that after the bus reform, the bus drivers improved their attitude; however, some of the participants said that under the new service, bus drivers were still rude (Table 6.1).

Table 6.1 Maltese Participants’ comments by factor, opinion about Arriva bus service, and intention to use the bus

| Factor | Index # | Quotation | The Arriva service is better than the ATP service | Consider using bus for frequent use |
|---|---|---|---|---|
| Comfort | 134 | "Comfortable with a.c…." | Agree Strongly | No |
| | 30 | "Cleaner and more comfortable" | Agree Strongly | No |
| Time | 100 | "However frequency reduced, and the interchanges are too time consuming and tiring" | Agree Slightly | Use bus already |
| Accessibility | 33 | "The only negative aspect is the lack of coverage of certain routes (e.g. 71)" | Agree Moderately | Use bus already |
| | 445 | "Now we have to go to Airport to catch a bus. A very long walking distance especially for elderly people. We were much more covered with old service." | Disagree Slightly | Use bus already |
| | 103 | "…accessibility improved a lot…" | Agree Moderately | Yes |
| Customer Care | 17 | "Drivers' attitude much better." | Agree Strongly | Use bus already |
| | 165 | "...more disciplined and better drivers" | Agree Strongly | Yes |
| | 442 | "Drivers - not all of them are polite. There are some not helpful at all" | Disagree Slightly | No |
| Fleet | 421 | "Better fleet…" | Agree Moderately | No |
| | 536 | "...better for people with wheelchairs or pushchairs…" "However, we lost heritage of old buses. They were part of Maltese Identity" | Agree Slightly | No |
| | 270 | "Bendy buses too large for our roads…" | Agree Slightly | No |
| | 484 | "Size is too large... cause traffic" | Agree Strongly | Use bus already |
| Fare | 467 | "Prices more worth it…" | Agree Moderately | Use bus already |
| | 73 | "...however price is slightly expensive for those that do not use the bus very often" | Agree Moderately | No |
| | 534 | "...fare is expensive especially for foreigners who have to pay more - it's not fair" | Agree Slightly | No |
| Information | 447 | "Information given to passengers increased a lot…" | Agree Strongly | No |
| | 1952 | "Lack of information. Before we knew when bus is coming. Now we don't. Even drivers do not know (not helpful)." | Disagree Strongly | Use bus already |
| Impact on the Environment | 162 | "Less impact on environment" | Agree Moderately | No |
| | 196 | "Eco-friendly" | Agree Slightly | Yes |
| Hearsay | 338 | "Everyone grumbles. Drivers do not seem experienced" | Agree Slightly | No |
| | 337 | "As I hear my husband complaining about the service" | Agree Slightly | No |
| | 1350 | "I hear complaints about long waiting times" | Disagree Moderately | No |
| | 3342 | "...I hear complaints about long waiting times. Such complaints were not there with the old service" | Agree Slightly | No |
| Security | 569 | "But accidents should be avoided" | Agree Slightly | No |
| | 615 | "Do not know but many accidents have been occurring lately" | Disagree Slightly | No |

‘Fleet’ was mentioned 7% of the time (Figure 6.10). The participants generally agreed that the new fleet was more modern and accessible, and was better than the old buses (Table 6.1). In addition, the low-floor buses were suitable for the elderly and for people with special needs (mentioned 1% of the time in both cases).

Some of the participants, however, argued that with the removal of the old buses, part of Malta’s heritage and identity was removed (Table 6.1). In relation to this comment, culture was mentioned 1% of the time (Figure 6.10).

There were also comments that the articulated buses were too large for the Maltese roads (Table 6.1); consequently, they became a source of traffic congestion. Traffic was mentioned 1% of the time (Figure 6.10).

The participants shared mixed feelings about the new fare structure, which was mentioned 5% of the time (Figure 6.10). Some of them stated that it was good, whereas others referred to the single journey ticket, and said that it was expensive (Table 6.1). Participants also mentioned the issue that tourists had to pay a different fare structure (Chapter 4, Table 4.5), which was unfair towards tourists (mentioned 1% of the time, Figure 6.10, Table 6.1).

Participants had mixed feelings regarding information (mentioned 2% of the time, Figure 6.10). Some of the participants said that information had improved whereas others said that the new information was confusing and lacked detail (Table 6.1).

The ‘impact on the environment’ was mentioned 4% of the time. The comments were positive regarding the Arriva service. Participants said that pollution from emissions reduced (Table 6.1).

‘Hearsay’ was another factor mentioned by participants (4%, Figure 6.10). The participants’ reliance on hearsay suggests that this factor has an indirect role in influencing customers’ intentions towards bus use (Bajada & Titheridge 2017). Participants heard negative comments about time-related issues, and because of that, they had no intention to use the bus in the future (Table 6.1).

The new Arriva bus service raised a new issue for Maltese participants. This issue was security (mentioned 2% of the time, Figure 6.10), specifically, the problem with driving behaviour (Table 6.1), which raised safety concerns.

### 6.2.3 Tourists

Tourists generally intended to use the bus, both before and after the bus service reform (Figure 6.11). Pre-reform, 1.3% of tourists were unsure, while after the reform, tourists who said 'yes' increased by 6%, while those who said 'no' decreased by 5%.

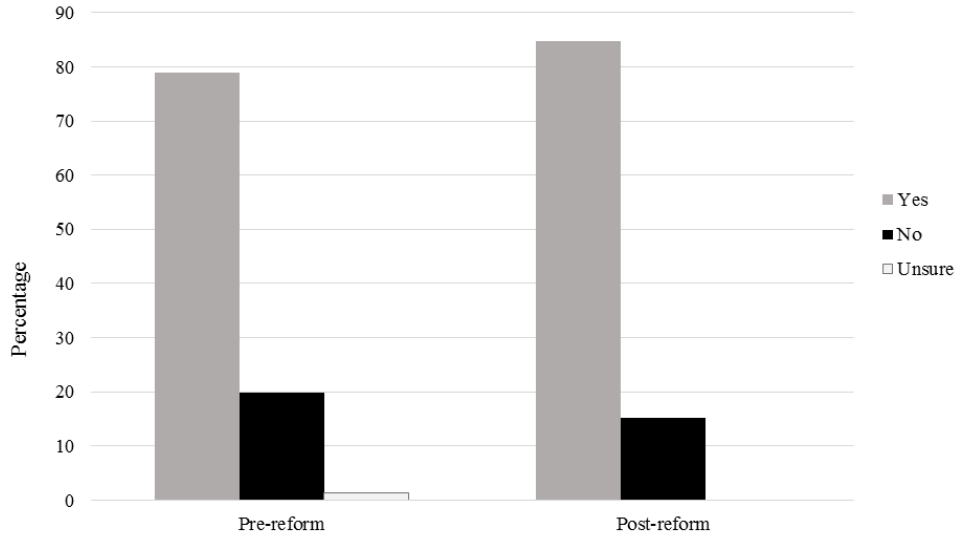


Figure 6.11 Intentions to use the bus - Tourists

Tourists provided reasons for their intentions to use the bus. Content analysis was performed on the tourists' responses. Figure 6.12 shows the reasons why tourists would use the bus, and Figure 6.13 shows the reasons why tourists would not use the bus.

Tourist bus users were also included. When visiting a country, tourists have the opportunity to choose what modes of transport to use. The content analysis, however, shows that there were tourists who were 'captive users' (Figure 6.12) of the bus in Malta (pre-reform: 3%; post-reform: 11%). These tourists did not have an alternative mode of transport, because of the limited modes of transport available in Malta – mainly choosing between hiring a car and using a taxi.

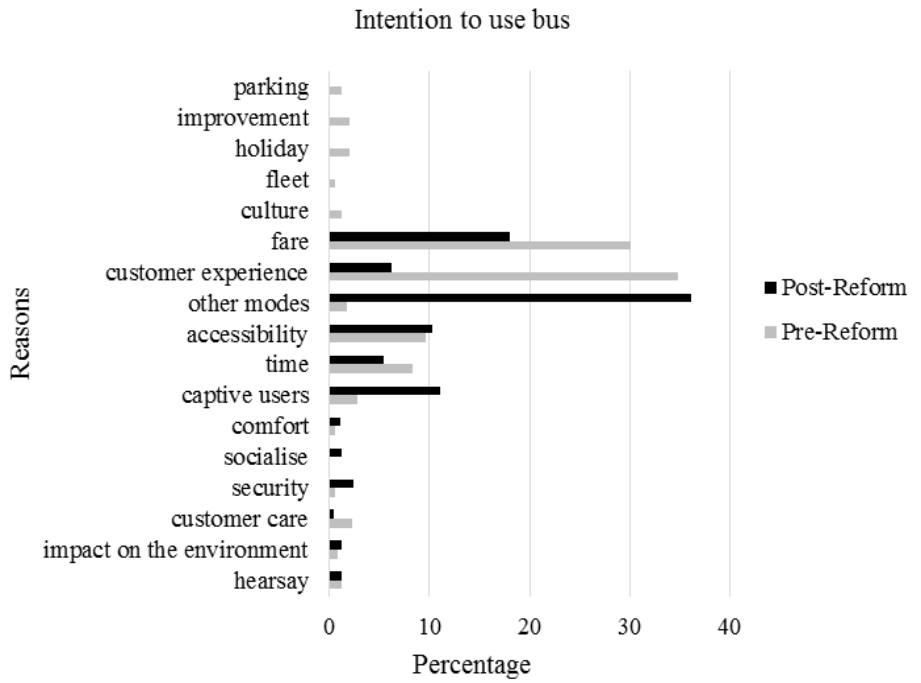


Figure 6.12 Reasons for intending to use bus - Tourists

Those participants who said that they would use the bus (before: 2%; after: 36%) but mentioned other modes of transport were in Malta on business or as a group, so they used cars offered by the company or used rented coaches (Figure 6.12).

Other factors that would influence whether tourists would use the bus included the eight pre-defined bus service quality characteristics (Figure 6.12). 'Accessibility' (before: 9%; after: 10%) and 'fare' (before: 30%; after: 18%) were two reasons why tourists would use the bus in both the bus reform instances. Before the reform responses included:

*They take you everywhere. (Accessibility, Index 263)*

*Cheap fare. (Fare, Index 1)*

After the reform, responses included:

*Takes you anywhere in Malta. (Accessibility, Index 15)*

*It's cheap and easy. (Fare, Index 243)*

Factors that were not pre-defined included ‘hearsay’, ‘socialise’, ‘culture’, ‘fleet’, ‘improvement’, and ‘parking’ (Figure 6.12). Regarding ‘hearsay’, those tourists who said that they would use the service said that they had not heard any complaints, so they would use the service.

‘Hearsay’ featured in the comments of those participants who did not intend to use the bus (Figure 6.13). Participants said that they had heard negative comments. For example, in the post-reform period, one tourist said:

> *Used it once to see the hype that was written online. (Hearsay, Index 355)*

The majority of the tourists who replied that they would not use the bus before (57%), and after (49%) the reform said that they would choose other modes of transport, mainly hiring a car (Figure 6.13).

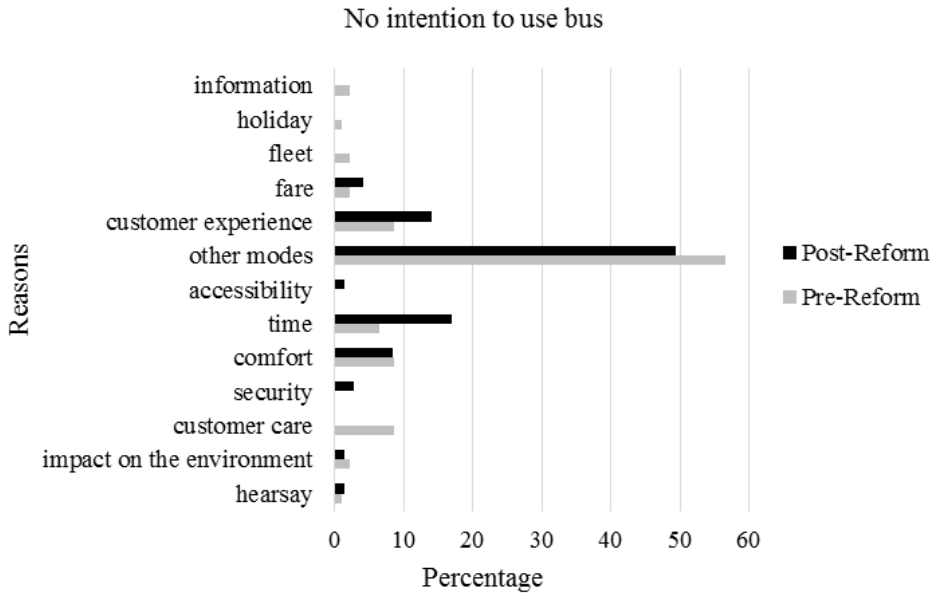


Figure 6.13 Reasons for not intending to use bus – Tourists

### 6.2.4 Comparisons of bus service delivery to intentions - Tourists

Post-reform, 27% of tourist participants were return tourists. They had experienced the PTA service; hence, they could compare the two services. These tourists were asked to rate the statement *“The new (Arriva) bus service is better than the old bus service”*. Figure 6.14 refers to the responses of this sub-sample. Thirty-two percent of the return

tourists agreed moderately, and 26% agreed strongly. The overall percentage of disagreement was 25%.

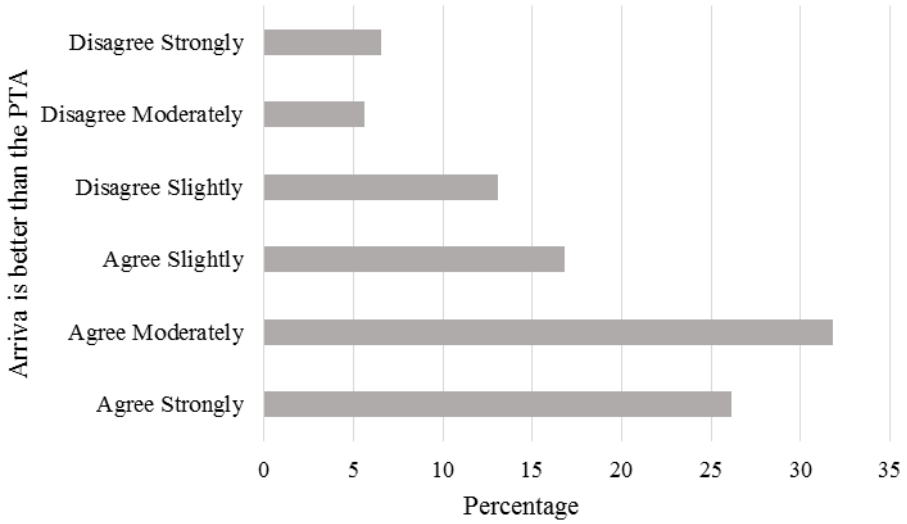


Figure 6.14 Ratings for Arriva service is better than the PTA service – Return Tourists

Figure 6.15 shows a bar graph with the percentages of ratings for the statement *Arriva service was better than the old service* and intention to use the bus. Participants who agreed moderately and strongly with the statement indicated that they would use the bus if they visited Malta again (Figure 6.15).

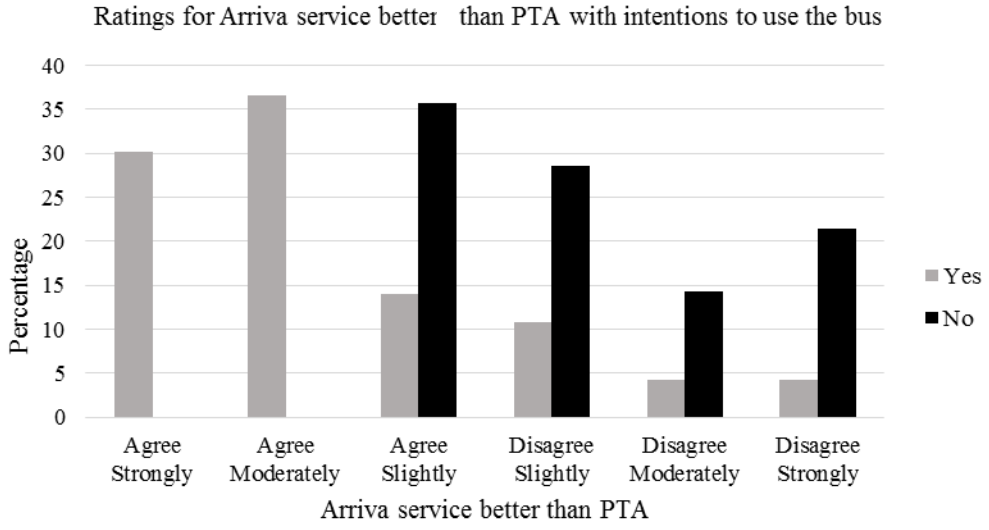


Figure 6.15 Tourists' ratings of the Arriva service when compared to the PTA service and their intention to use the bus

Tourist participants were asked to provide reasons for their ratings of the statement that Arriva was better than the old service. Figure 6.16 shows the results of the content analysis.

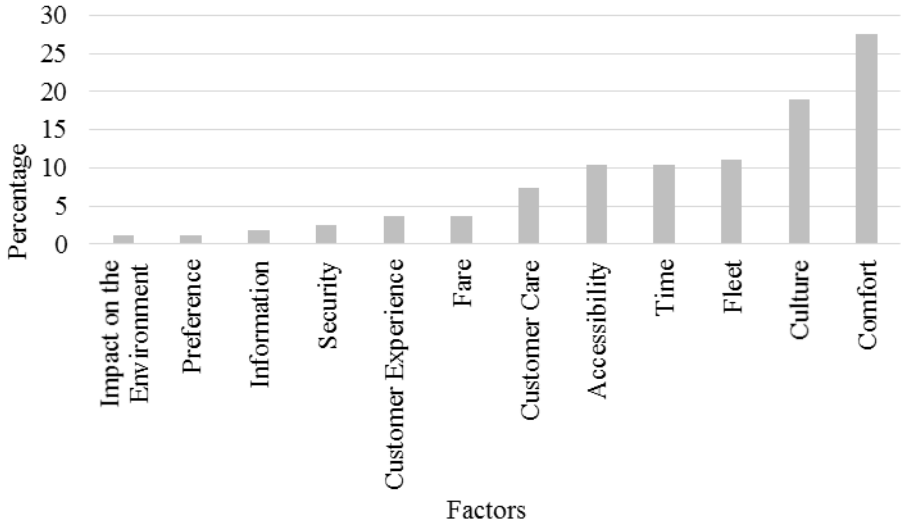


Figure 6.16 Percentage of factors that describe the Arriva bus service when compared with the PTA bus service – Tourists

The eight pre-defined bus service quality characteristics appear in Figure 6.16 as well. The majority of the tourist participants said that the new bus service was better than the old service due to 'comfort' (27%). The fact that the buses under the Arriva service were air-conditioned mostly influenced positively the participants' evaluations of the new service.

Comments on 'accessibility' referred mainly to *"more space for disabled people"* (Index 122), and *"more routes than before"* (Index 171). Negative comments on 'accessibility' referred to *"worse routes now"* (Index 226), and *"older routes were easier and better"* (Index 211).

The comments about 'information' were negative. Tourists thought that the new service had *"bad information"* (Index 278). Similar comments were made regarding 'time', *"very poor time keeping…"* (Index 54), *"…definitely bad timetable"* (Index 147).

Tourists had mixed feelings regarding the fare structure. They said that the new fare structure was "more expensive" (Index 149), and referred to the issue of the price difference, stated that there was *"discriminatory pricing"* (Index 359).

'Culture' was mentioned 19% of the time (Figure 6.16). Tourists mentioned that the removal of the old buses led to a loss of Maltese character. This issue was also mentioned in the factor 'fleet', which was mentioned 11% of the time. 'Customer care' was mentioned 4% of the time. Generally, the tourist participants said that the reform was necessary, but there was room for improvement.

## 6.3 Attitudes towards Bus Service Quality

### 6.3.1 Maltese Residents

Figure 6.17 shows the percentage rating of the bus service quality by the participants, pre- and post-reform. Pre-reform, 'fare' was considered the best quality characteristic for the island's service. 'Information' and 'time' were rated negatively because in addition to only limited information being available to users, the previous bus service also had punctuality-related problems.

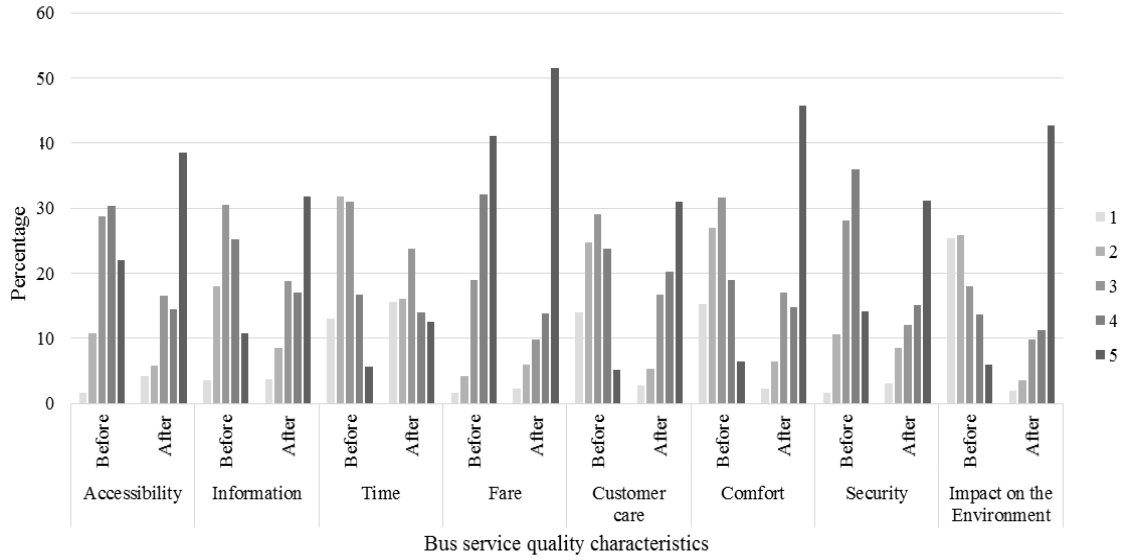


Figure 6.17 Percentage rating of the bus service quality characteristics pre-and post- reform – Maltese residents

The data show that after the bus service reform, people's attitudes towards the bus service quality characteristics improved. Figure 6.17 indicates improved attitudes towards all of the characteristics; the only exception was 'time'. In fact, 'time'

continued to be a pressing concern that characterised the new bus service. Problems included punctuality issues, which had increased when compared to the previous system, causing unreliability.

Despite an increase in the percentage of participants who were unable to rate the service characteristics after the reform (Figure 6.18), presumably because of the increased use of the car, the overall attitudes towards all the characteristics improved (Figure 6.17). The factors that were rated 5 (the best) increased following the reform, implying an improvement compared to the old bus service. This is evident for the characteristics 'accessibility' (+20%), 'information' (+20%), 'customer care' (+25%), 'security' (+15%), 'comfort' (+40%) and 'impact on the environment' (+35%).

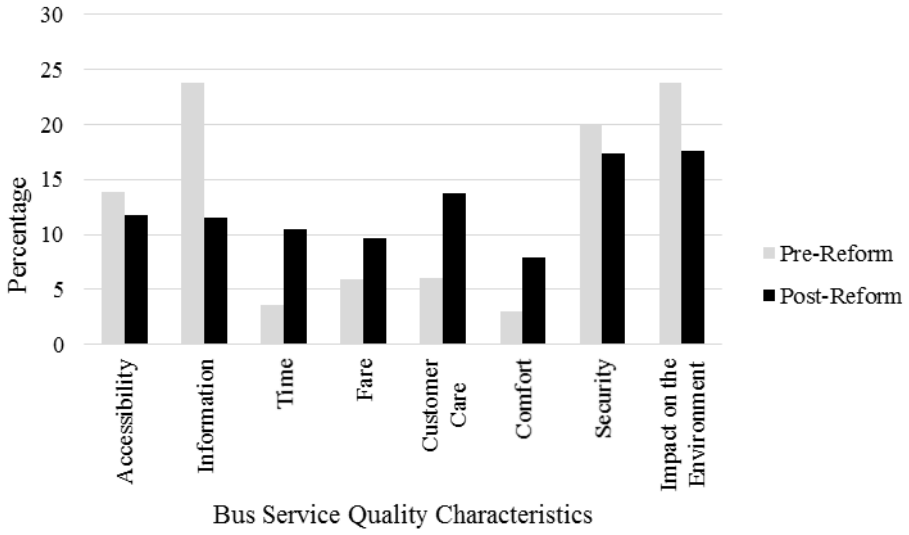


Figure 6.18 Percentage of Maltese resident participants selecting 'don't know', before and after the reform

The largest rating differences were attributed to 'comfort' and 'impact on the environment'. The new bus fleet in July 2011 was made up of low-floor vehicles with air-conditioning, which improved dramatically the feeling of comfort whilst on the bus. Furthermore, all vehicles were equipped with Euro V compliant engines, which considerably reduced the total emissions from the bus service, especially comparing the new fleet to the famous Malta buses (famous because they were vintage, custom-built vehicles, and they were a tourist attraction).

### 6.3.2 Tourists

Figure 6.19 illustrates the percentage rating of the bus service quality of the tourist participants, pre- and post-reform. Pre-reform, 'fare' was considered the best quality characteristic, possibly because fares were cheap. 'Impact on the environment', followed by 'time' and 'comfort' were rated negatively because the bus service provided by the PTA did not follow the emission standards imposed by the EU. Furthermore, the bus fleet was not comfortable, and there were punctuality-related problems.

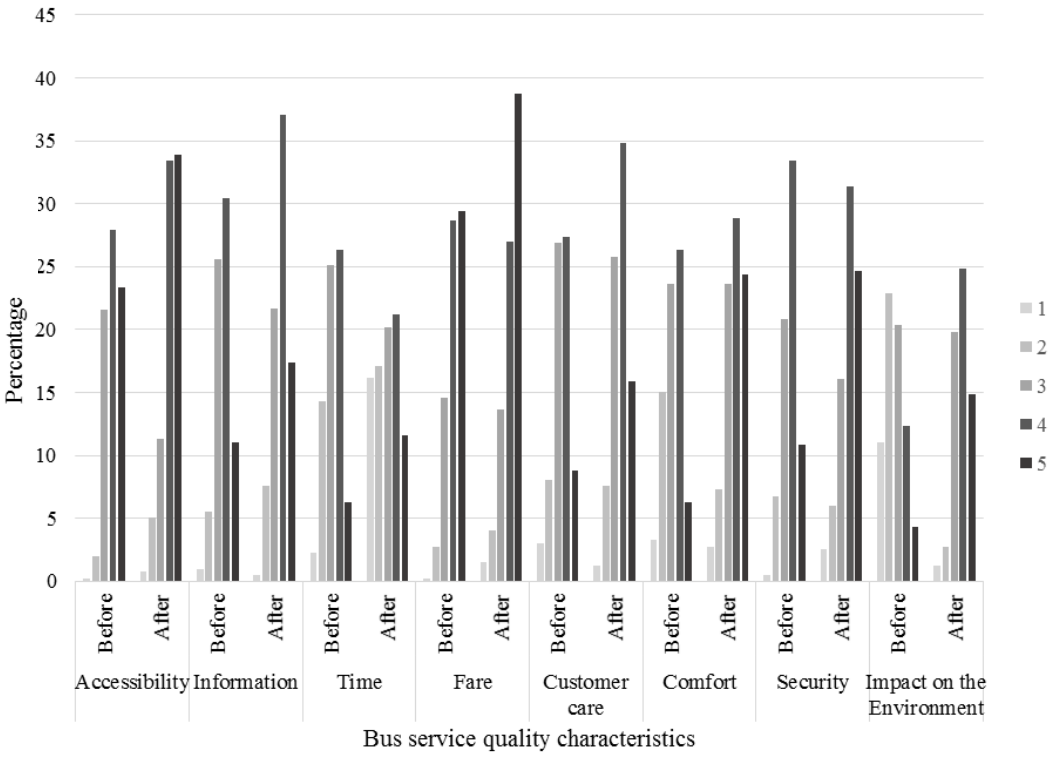


Figure 6.19 Rating of the bus service quality characteristics pre- and post-reform – Tourists

'Fare' was still regarded as the best, as it was rated '5' by 39% of the participants (Figure 6.19). 'Customer care', 'comfort', and 'security' were also rated positively. 'Time' was rated negatively – 16% rated it as the worst ('1'), and 17% rated it as '2' (nearly the worst). Twenty-one percent of the participants still rated 'time' '4' (nearly the best) (Figure 6.19). The possible reason for the varied ratings for 'time' was that the service was punctual and reliable only in particular areas.

Tourist participants who selected ‘don’t know’ decreased after the reform. The possible reason for this finding could be that most of the tourist participants used the bus; hence, they were knowledgeable about the service quality from experience.

Figure 6.20 shows that this decrease in percentages happened for all service quality characteristics, except for ‘impact on the environment’ (36%). Tourist participants stated that they did not see any pollution emitted from the buses. They said, however, that there could be other invisible impacts, which they were not aware of; hence, they selected the ‘don’t know’ option.

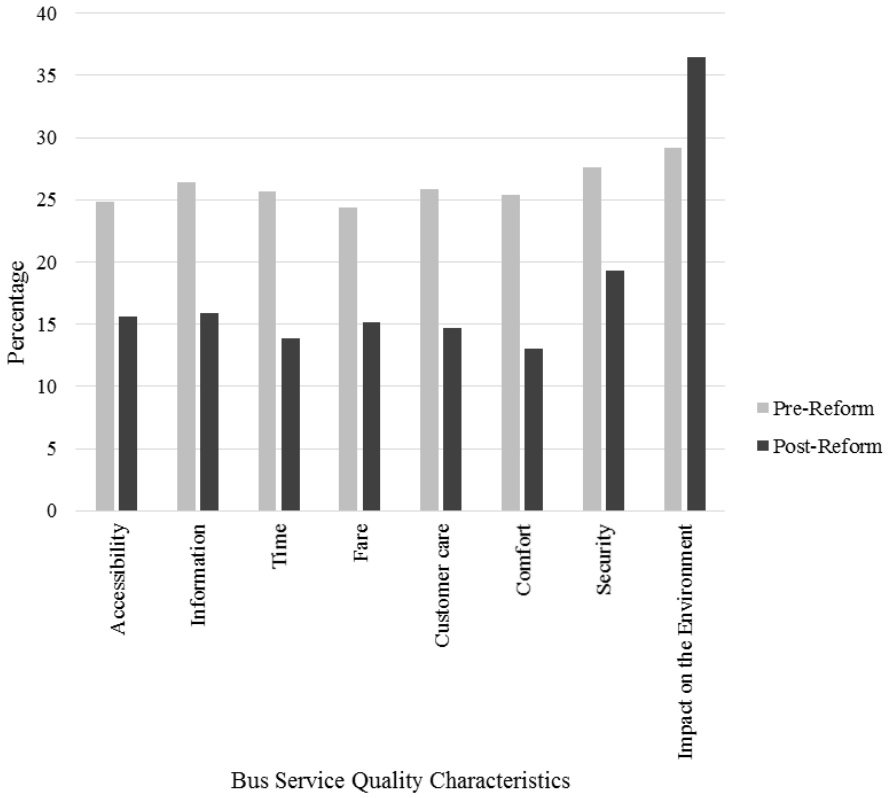


Figure 6.20 Percentage of tourist participants selecting ‘don’t know’, pre-and post-reform

## 6.4 Expectations on the Bus Service

Before the reform, the government raised Maltese residents’ expectations (Attard 2012, Bajada & Titheridge 2016). These expectations derived mainly from promises and from how the bus service was marketed. In fact, the outline of services made by the government resembled other public transport services abroad (e.g., the London tube map, Chapter 4, Figure 4.7).

Tourists' expectations are different from the Maltese residents' expectations (Bajada & Titheridge 2016, Bajada & Titheridge 2017). This finding was evident in particular for the first-time visitors; returning tourists knew the old service, and they seemed to have some expectations. Hence, as discussed in Chapter 2, sub-section 2.7.2, this information strongly supports the idea that expectations are formed based on people's experiences and perceptions, making them quite subjective.

### 6.4.1 Maltese Residents

In the questionnaires after the reform, participants were asked to rate the statement: *"The new (Arriva) bus service met my expectations"*. The scale varied from 'agree strongly' to 'disagree strongly'. The participants also had the option to select 'I did not have expectations'. A high percentage of car user participants (81%) did not have expectations, and interestingly, 13% of bus users did not have expectations either. Only 6% of the 'other' mode users did not have expectations.

Car users had the most expectations ranging from 'agree strongly' (15%) to 'disagree strongly' (17%) (Figure 6.21). Probably, car users formed their expectations based on their perceptions, and the marketing campaign done by government might have influenced them. They, however, still used their car after the reform.

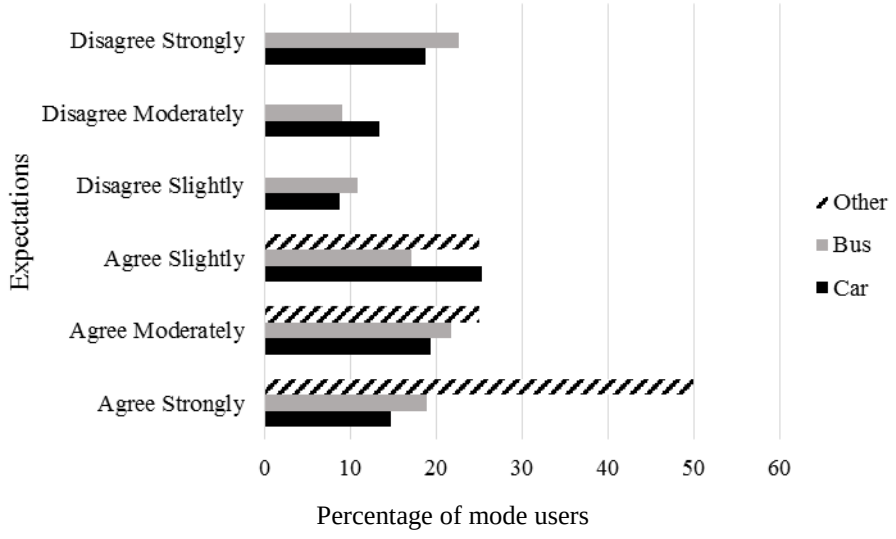


Figure 6.21 Arriva met my expectations – Maltese Residents

Bus users' highest responses were for 'disagree strongly' (23%) followed by 22% for both 'agree moderately' and 19% 'agree strongly'. Figure 6.21 shows that bus users had mixed feelings regarding their expectations. Possibly, they used the bus service that was good in some instances and bad in others, or the service was better in some parts of the network areas than it was in other areas.

When answering this question, participants were asked to state a reason for their answers. Figure 6.22 shows the percentages for the reasons provided. The content analysis was performed in an inductive manner, but the factors that form part of the eight service quality characteristics used in this research were evident.

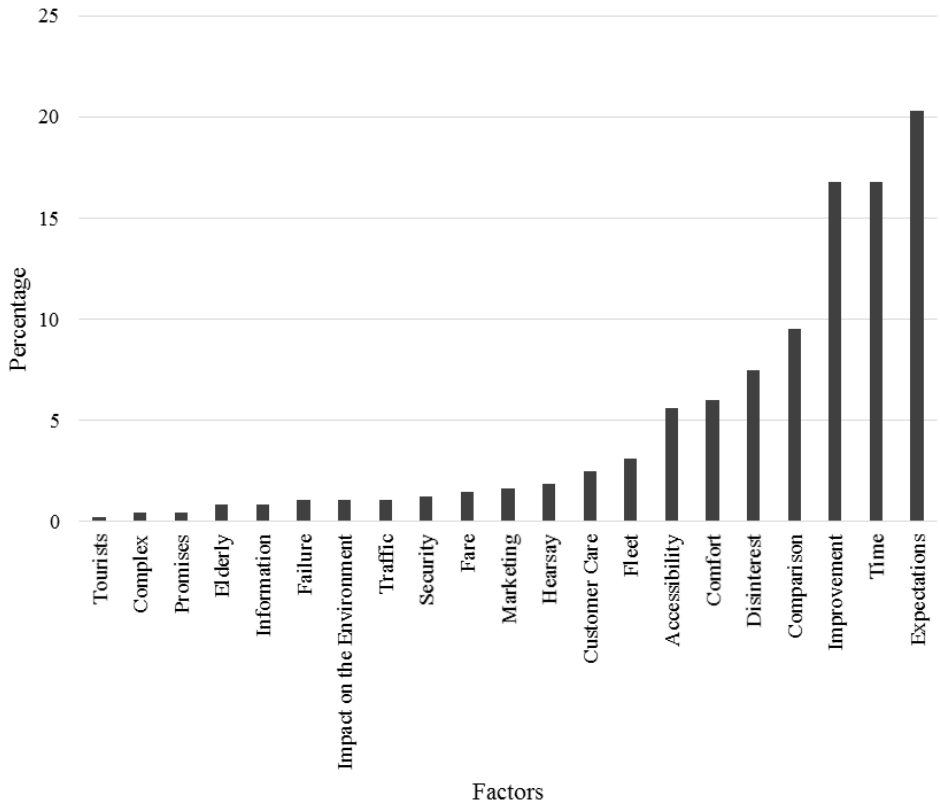


Figure 6.22 Reasons for rating 'Arriva met my expectations' – Maltese residents

Twenty percent of the participants mentioned 'expectations', as the question regarded this factor. When they did so, they used words to show that they compared the new service either with the old service or with foreign cases, particularly London. In fact, 9% of the participants' statements included comparison.

*I thought they would be like the buses in London, but it's far from it. (Index 2302, bus user)*

*I'm not satisfied with the service. I thought that the service would be like that in England (Index 1304, car user)*

*For all the promotions they did before 3rd July 2011, I thought that the service would have been much better (Index 431, car user)*

Time-related issues were a major concern after the reform. This is also evident in the participants' responses; 17% of the participants mentioned 'time', and most of the responses were negative. For instance:

*Unreliable. Time wasting. Change of routes to worse. (Index 2333, bus user)*

*Not punctual enough. (Index 484, car user)*

This factor was often linked with another factor, 'improvement'. Some of the participants mentioned that time keeping needed to improve.

*Overall they are good. Time is the only problem. (Index 824, bus user)*

Seven percent of the participant car users specifically stated that they did not have expectations because they were not interested in the bus service. This was followed by 6% of the participants who mentioned 'comfort' (Figure 6.22). The comments regarding 'comfort' were mostly positive, particularly because the vehicles were clean and air-conditioned. The other 6% who mentioned 'accessibility' were not as positive (Figure 6.22); they complained about the removal of particular routes. There were, nevertheless, some positive comments about the buses being low-floor, hence improving accessibility.

Other comments included the 'fleet' (3%) (Figure 6.22). Participants stated that the buses were too large for the Maltese roads, thus causing congestion (an issue that was mentioned 1% of the time in this question). Comments related to 'customer care' (2%)

mentioned that the bus drivers had improved their attitude towards the customers (Figure 6.22).

To explore further participants' expectations, the questionnaire required them to rate the two most important factors for a potentially successful bus service. After that, the participants were asked to rate further and in detail each of the selected factors.

Figure 6.23 and Figure 6.246 (p.225) show clustered column graphs of the most important and second most important factors according to the different mode users. In this manner, it is possible to identify differences in expectations particularly between car users and bus users in both instances of the reform.

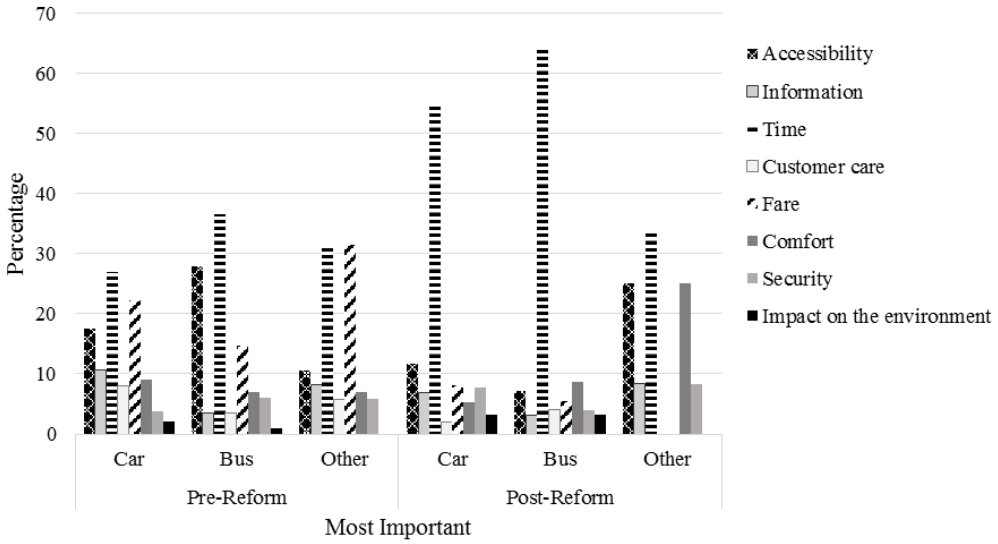


Figure 6.23 Most important factors for a successful bus service by mode use – Maltese residents

Before the reform, bus users selected 'time' (37%) as 'most important' for a successful bus service (followed by 'accessibility' (28%), and 'fare' (15%) (Figure 6.23). After the reform, the preferences for a successful bus service persisted with 'time' (64%), followed by small percentages for 'comfort' (9%) and 'accessibility' (7%) (Figure 6.23).

For car users, before the reform, ‘time’ (27%) was the most important factor for a successful bus service (Figure 6.23). Other factors that were considered as most important were ‘fare’ (22%) and ‘accessibility’ (17%) (Figure 6.23).

After the reform, car users considered ‘time’ (55%) as the most important factor for a successful bus service. This was then followed by minor percentages ‘accessibility’ (12%), ‘fare’ (8%), ‘security’ (8%), ‘information’ (7%), and ‘comfort’ (5%) (Figure 6.23).

The discrepancies between some of these factors pre- and post-reform were interesting to note. Table 6.2 shows the percentage change of each of these factors.

Table 6.2 Percentage change of car users’ preferences for the most important factor for a successful bus service – Maltese residents

| **Service Quality Characteristic** | **Percentage Change** |
|---|---|
| Information | -4 |
| Security | -4 |
| Fare | -14 |
| Accessibility | -6 |
| Impact on the Environment | +1 |
| Time | +28 |

The percentage change for ‘time’ was the highest (Table 6.2). Time related issues were a major problem, hence car users considered ‘time’ as one of the most important factors for a successful bus service.

Among the other service quality characteristics, only ‘impact on the environment’ had a positive percentage change (+1%) after the reform for car users (Table 6.2). This finding suggests that a minimal percentage of car users were environmentally conscious and ‘time’ was considered as the most important factor. The importance given to ‘time’ is also supported by the fact that the other service quality characteristics had negative percentage changes (Table 6.2).

The forthcoming findings focus on the most important factor post-reform for bus users (time) and for car users (time). Participants were further asked to rate the factors that composed each of the selected service quality characteristics.

Figure 6.24 and Figure 6.25 show the ratings for 'time' after the reform by bus users and car users. These findings could indicate what the different mode users expect of a successful bus service. The ratings were based on a Likert scale from '1' (least important) to '5' (most important).

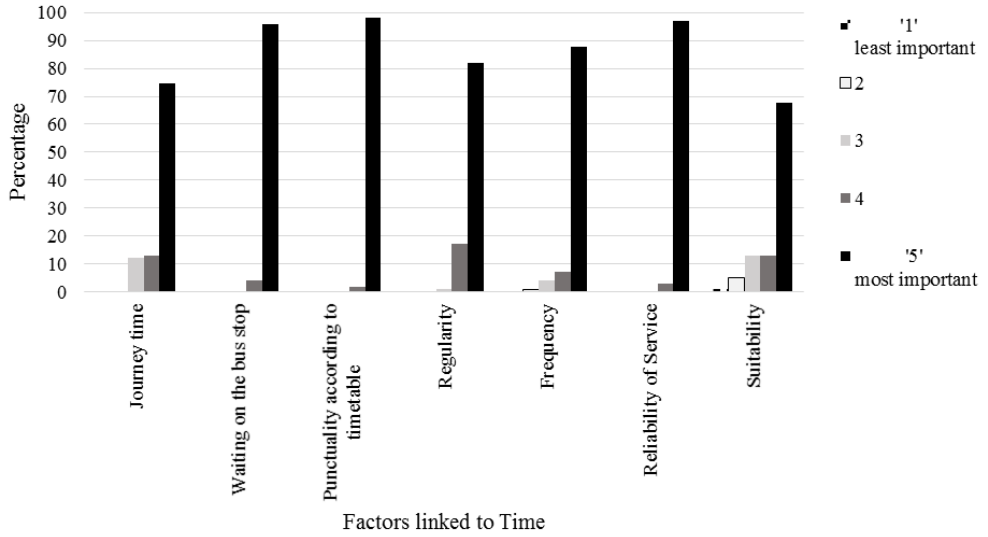


Figure 6.24 Ratings on time as the most important factor for Maltese residents bus users post-reform

The ratings in Figure 6.24 indicate that from their experience of the reformed bus service, bus users rated as most important 'punctuality according to time-table' (98%), 'reliability of service' (97%), and 'waiting on the bus stop' (96%). These results lead to think that the bus service required further improvement regarding these factors.

After the reform, 'time' for car users was the most important factor. Possibly, car users based their ratings on hearsay. This supposition can be deduced from the fact that they rated 'punctuality according to time-table' (93%) and 'waiting on the bus stop' (92%) as 'most important'.

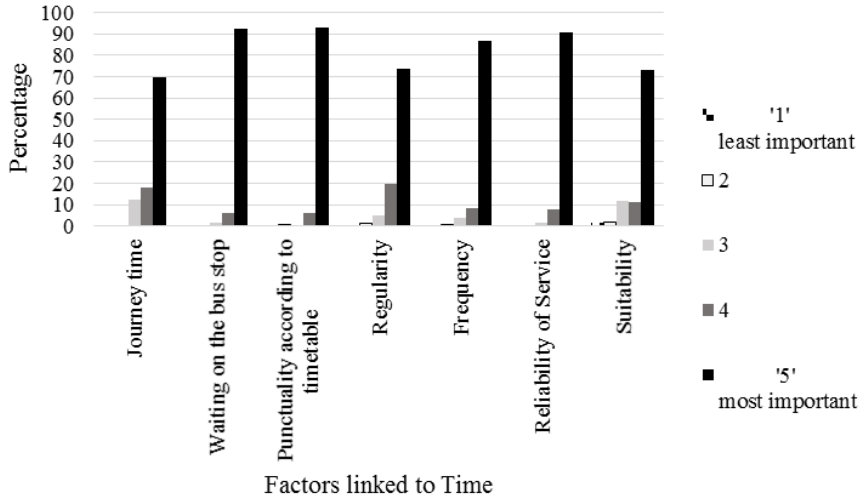


Figure 6.25 Ratings on time as the most important factor for Maltese resident car users post-reform

As a preference for the second most important factors before the reform, bus users selected ‘comfort’ (19%), ‘time’ (19%), and ‘security’ (36%) (Figure 6.26). After the reform, these were ‘comfort’ (18%), followed by ‘fare’ (13%), and ‘accessibility’ (16%) (Figure 6.26).

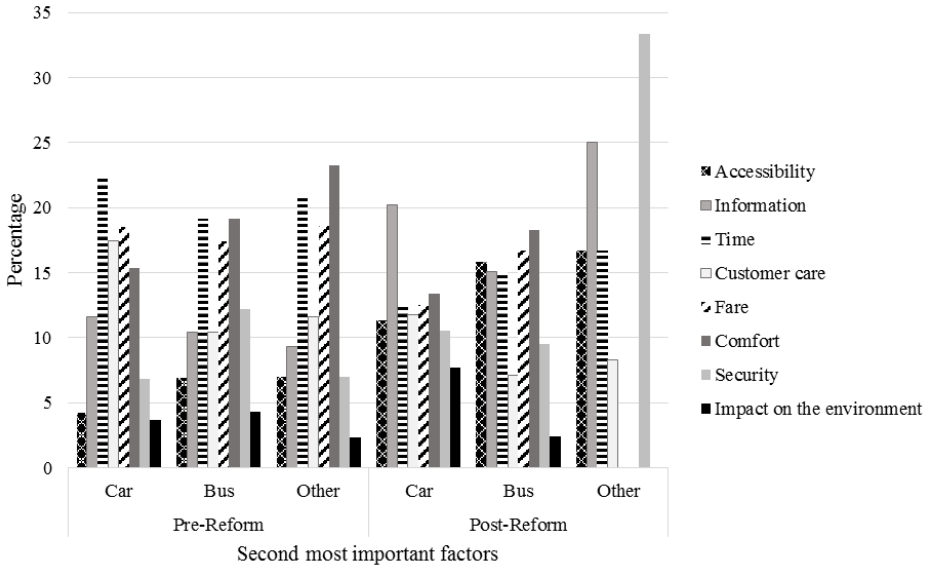


Figure 6.26 Second most important factors for a successful bus service by mode use – Maltese residents

Figure 6.26 shows that car users had a varied preference for the second most important factors, namely, 'time' (22%), followed by 'fare' (19%), and 'customer care' (17%). After the reform, car users selected 'information' (20%), followed by 'comfort' (13%), 'fare' (13%), and 'time' (13%) as second most important factors (Figure 6.26). The service was completely new, even for Maltese residents car users, hence they considered 'information' as a factor that might influence the success of a bus service.

The difference in the selection of factors indicates that the participants' expectations varied; hence, it would be difficult to target all the expectations. It is evident, however, that particular factors like 'time', 'accessibility', 'fare', and 'information' are crucial factors that influence Maltese participants' expectations regarding a bus service.

### 6.4.2 Tourists

Fifty-seven percent of tourist bus users did not have expectations, and nor did 32% of hired car users, 1% private coach users, and 10% other mode users. Figure 6.27 shows that generally, tourists' expectations were met. Most of the different mode users selected between 'agree slightly' and 'agree strongly'. Interestingly, 42% of bus users agreed moderately, and 50% of hired car users agreed strongly that the bus service met their expectations.

Tourist participants answered the open-ended question that was linked to their expectations. Content analysis revealed once more that 'time' was one of the top mentioned factors; in fact, it featured in 30% of the comments (Figure 6.28). Comments included reference to the need to improve punctuality: *"I expected them to be on time" (Index 159, hired car user).* Other comments, however, referred to time with a more positive note: *"Punctual, clean" (Index 236, other mode user)*.

Figure 6.28 shows a drastic change between percentages for 'time' and 'comfort'. The latter was mentioned 14% of the time, nearly half the number of instances that 'time' was mentioned. This finding suggests that 'time' was a pertinent concern, and that tourists were influenced by time, although potentially differently from Maltese residents.

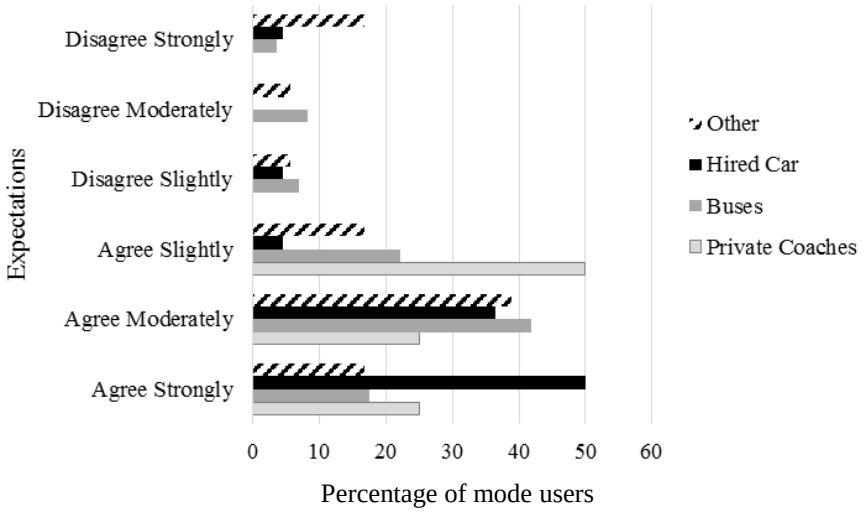


Figure 6.27 Arriva met my expectations – Tourists

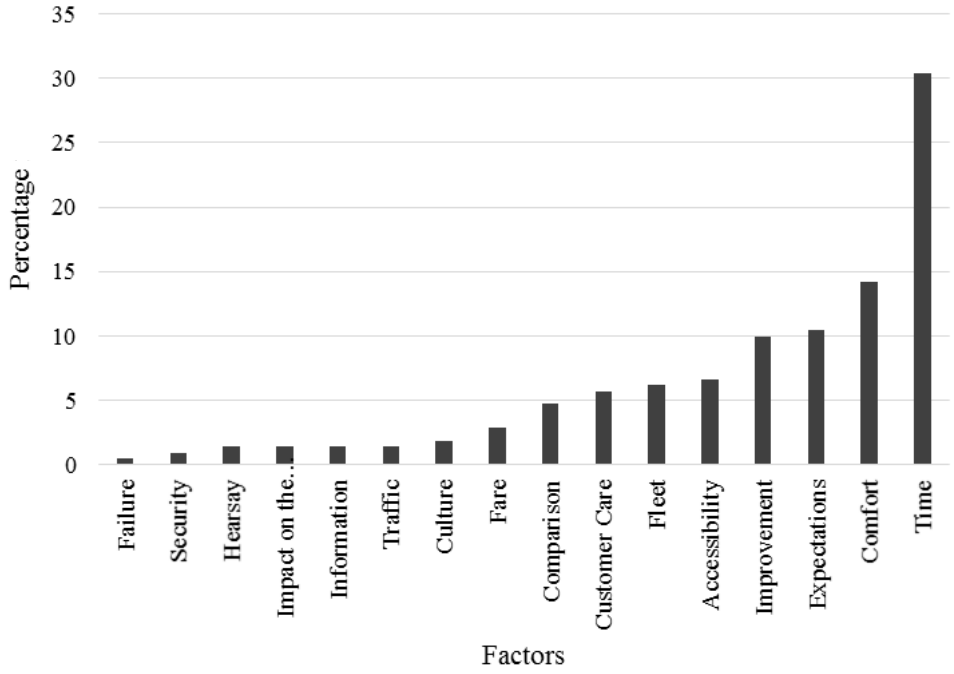


Figure 6.28 Reasons for rating 'Arriva met my expectations' - Tourists

Comments on 'comfort' were generally positive, specifically mentioning the air-conditioning and that the bus was clean and comfortable. There were some comments; however, indicating that driving speeds were too fast, making the ride uncomfortable.

The factors 'expectations' and 'improvement' followed; each was mentioned in 10% of the comments (Figure 6.28). While some of the participants said that they *"didn't know what to expect"* (Index 253, other mode user), others had expectations, and the new service did not meet them.

*Expected better after the so called multi-million investment. (Index 366, hired car user)*

*I expected them to be more serious on their job. (Index 193, bus user)*

*Some expectations, like 'all new buses have euro 5 engines' have not been met yet. (Index 196, hired car user)*

Regarding 'improvement', one participant said that this was a *"Great reform"* (Index 189, hired car user), and another participant said that there is *"Still a lot to do"* (Index 158, other mode user). Others mentioned the need to improve on punctuality.

Lower percentages were related to 'accessibility' (7%), 'fleet' (6%), 'customer care' (6%), and 'comparison' (5%) (Figure 6.28). Regarding 'accessibility', the comments were that the service was easy to use, but there were instances when the participants mentioned that there were *"Fewer buses and routes, resorted to lots of walking in heat"* (Index 349, bus user).

Comments on the fleet varied; some participants remarked that the buses were more modern, and another participant said *"Sometimes long buses caused traffic"* (Index 245, hired car user). The comments on 'customer care' were mostly positive, stating in particular that the service had become more professional (e.g., Index 60, bus user), and the drivers looked smart (e.g., Index 353, bus user).

Regarding the factor 'comparison' (Figure 6.28), when tourists discussed their expectations, they compared the new bus service either to the old service or to the service in their country. Hence, they used other services, based on their experiences, as reference points to form their expectations.

*Better in every respect. (Index 356, bus user)*

*We have these in the UK, so used to their problems. (Index 12, other user)*

*Thought that the service would be better. (Index 118, bus user).*

Other comments included the ‘fare’ (3%) (Figure 6.28), generally saying that the service was cheap. Other tourists expected the service to be cheaper due to the small size of the island:

> *Expected cheap fare due to ‘proximity’ of island. (Index 320, bus user).*

Participants also mentioned ‘culture’ (2%), stating that the buses in the old service had character, and that they liked the old buses (Figure 6.28). Other factors were mentioned one percent of the time (Figure 6.28); these included ‘traffic’, ‘information’, ‘impact on the environment’, ‘hearsay’, and ‘security’. These mainly regarded observations that the articulated vehicles caused congestion, that information needed to improve, and on a more positive note, that there was less pollution. On ‘hearsay’, participants mentioned that they *“Heard terrible stories from timesofmalta.com”* (one of the online newspapers in Malta) (Index 362, private coach user). With regard to security, participants said that because of excessive speed, they felt unsafe.

Tourists were also asked to identify the two most important factors for a potentially successful bus service. Figure 6.29 shows the most important factors according to tourists by frequent mode used.

The focus of the analysis of tourists’ expectations of a successful bus service is on bus users. This is the most popular mode used by tourists; hence, it is important to understand their expectations following their experiences.

After the reform, the most obvious percentage change by bus users as to what is the most important factor is ‘time’ (+15%) (Figure 6.29). ‘Comfort’ had a 4% increase as one of the most important factors for a successful bus service, and ‘security’ (+2%) (Figure 6.29). These results suggests concerns for ‘time’ and to a lesser extent ‘comfort’ and ‘security’.

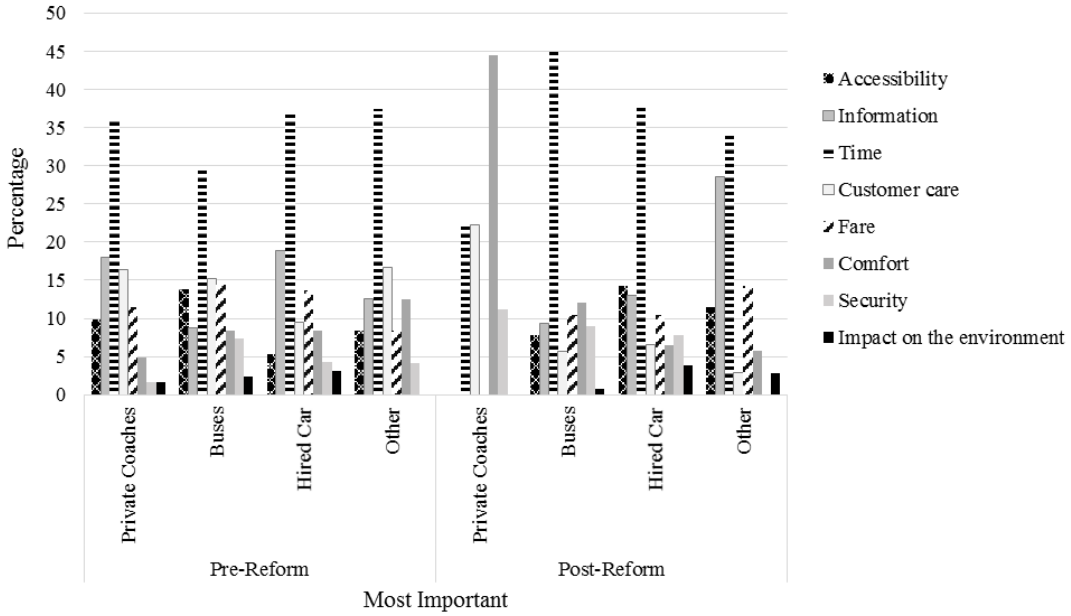


Figure 6.29 Most important factors for a successful bus service by mode use - Tourists

The following results refer to further ratings regarding the most important factors for tourist bus users post-reform for 'time', 'comfort', and 'security' (Figure 6.29).

In Figure 6.31 regarding 'time', tourists rated as most important 'punctuality according to the time-table' (76%), and 'waiting at the bus stop' (75%) (Figure 6.30). The findings suggest that the Arriva service had these major issues, which influenced the tourist bus users' choice when rating the most important factors for a potentially successful bus service.

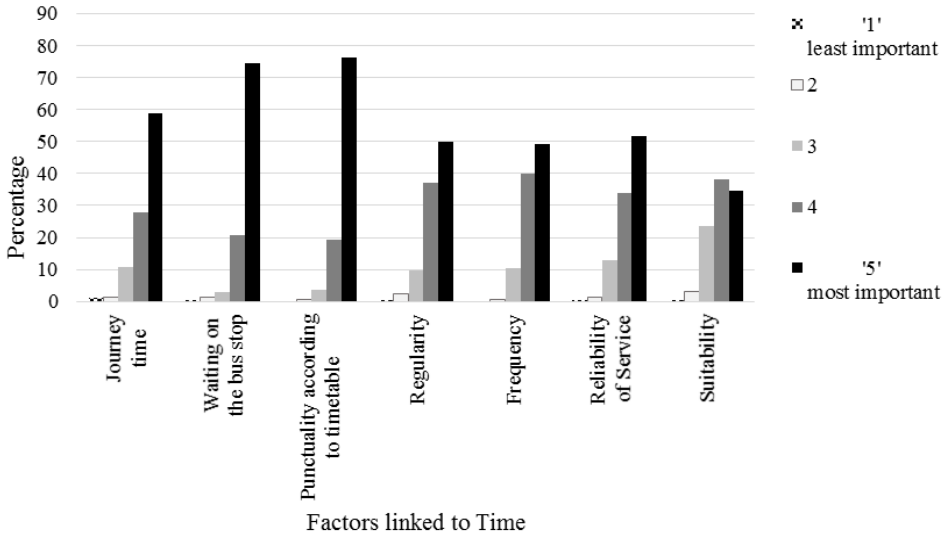


Figure 6.30 Ratings on time as the most important factors for Tourists bus users post-reform

Regarding ‘comfort’, ‘temperature conditions on the bus’ (75%), ‘level of crowding on the bus’ (70%), and ‘driving speed and manner’ (63%) were rated as most important (Figure 6.31). The findings suggest that the reformed bus service suffered from these problems, which affected the tourists’ expectations based on their experience.

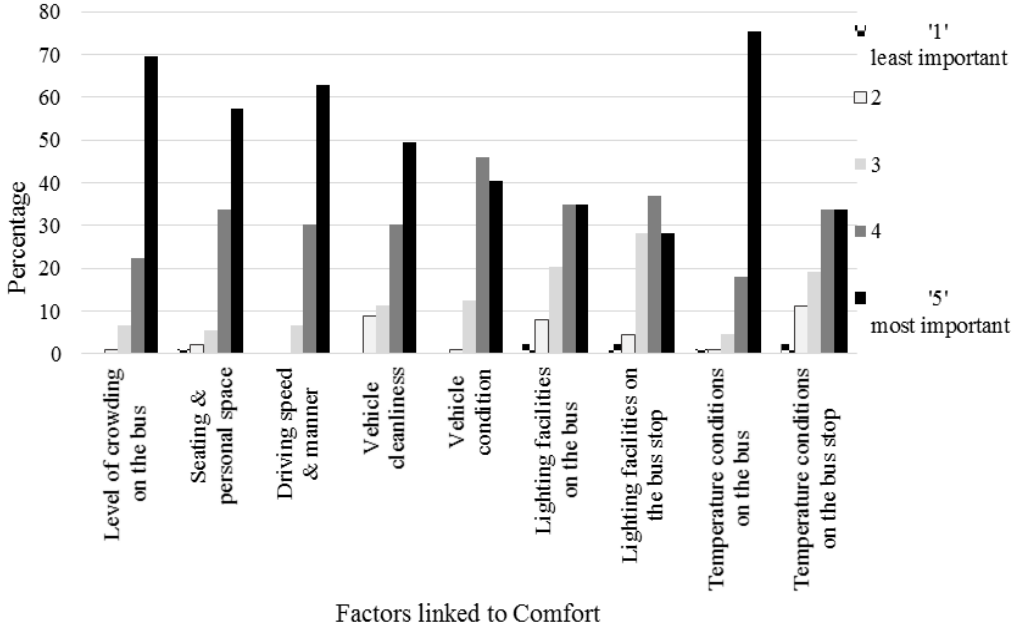


Figure 6.31 Ratings on comfort as the most important factors for tourist bus users post-reform

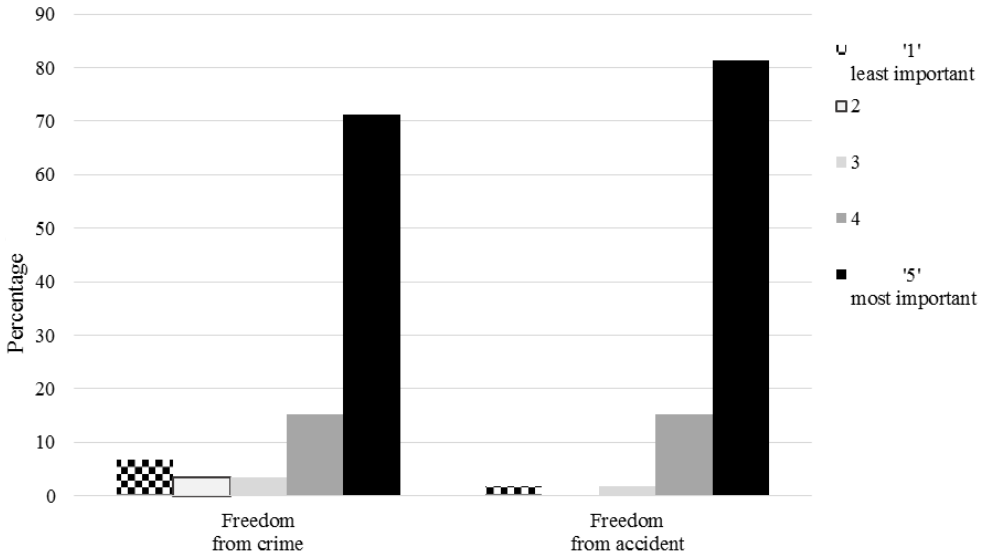


Figure 6.32 Ratings on security as the most important factors for tourist bus users post-reform

The ratings in Figure 6.32 show that post-reform, tourists were more concerned with accidents (81%) and crime (71%). These two were rated as the most important for a successful bus service. This finding suggests that from their experience of the bus, tourists suffered from both issues.

'Accessibility' (+7%), 'security' (+5%), and 'comfort' (+2%) were selected more post-reform than pre-reform, as a second most important factor by tourists bus users (Figure 6.33). Regarding accessibility, the new network was probably not providing easy access to everywhere. A possible reason for this is that due to time-related issues, accessibility was affected negatively so tourists could not reach their destinations. The possible reasons why 'security' and 'comfort' were mentioned more as second most important factors were possibly associated with fast driving, including the associated discomfort with such driving manners, and thefts on the bus.

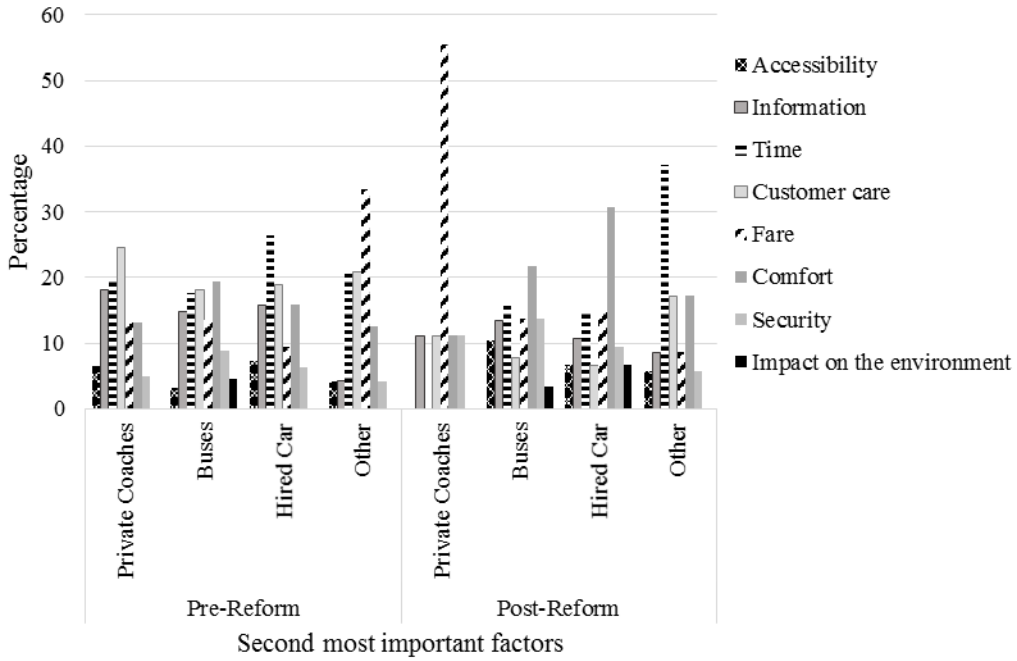


Figure 6.33 Second most important factors for a successful bus service by mode use - Tourists

## 6.5 Comments and Suggestions on the Bus Service

The final question of the questionnaires was an open-ended question. This question regarded suggestions that the participants wished to share or comments that they wanted to make about the bus service.

'Customer care' was a factor that was mentioned by both the Maltese and tourist participants before the reform (Figure 6.34 and Figure 6.35). A possible reason for the similarity in this result was due to bus drivers' behaviour, which is evident from what the participants said:

> *Drivers should be more educated and have better manners. (Maltese Resident, index number 43)*
>
> *Certain drivers need to behave better and be more polite. (Tourist, index number 231)*

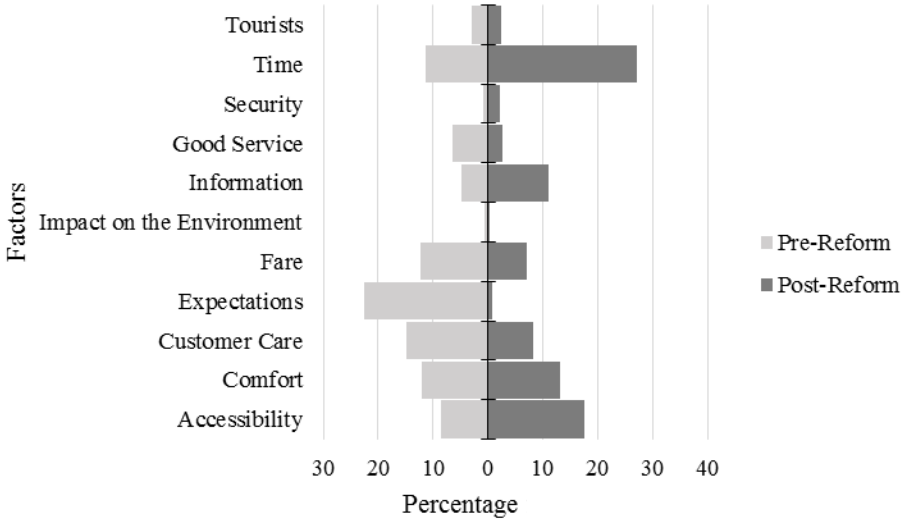


Figure 6.34 Factors describing the comments and suggestions – Maltese residents, Pre- and Post-Reform

After the bus service reform, issues related to 'time' concerned the Maltese residents and tourists alike (Figure 6.34 and Figure 6.35). This is evident from the percentages of each population sample related to this issue (Maltese residents: 27%; tourists: 32%).

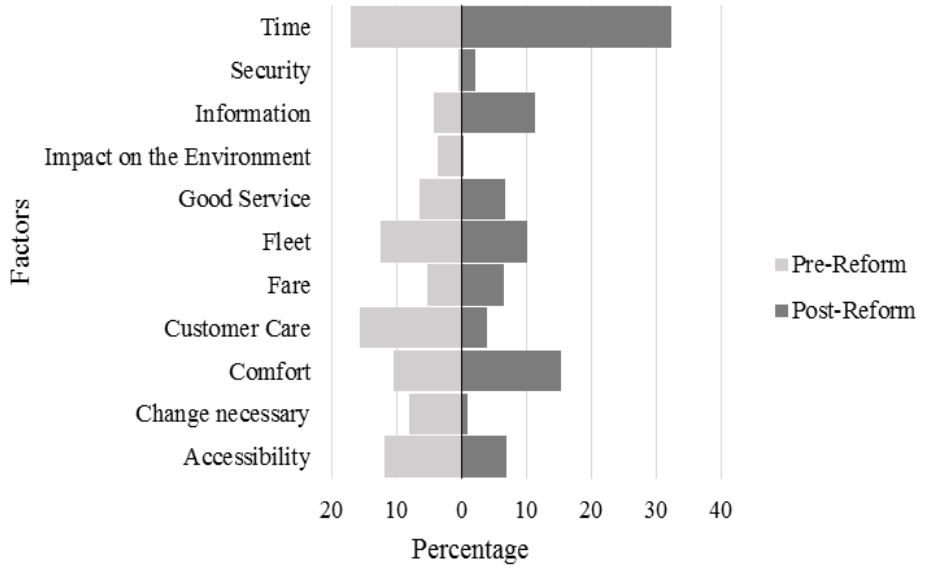


Figure 6.35 Factors describing the comments and suggestions – Tourists, Pre- and Post-Reform

### 6.5.1 Maltese Residents

Figure 6.34 shows that the mentioning of 'expectations' was substantial (23%) before the reform. Furthermore, apart from the negative customer experience on board the bus, mainly due to the behaviour of bus drivers, 'comfort' (12%) and 'time' (11%) were referred to in a negative manner.

With regard to 'comfort', participants mentioned issues like overcrowding during the summer months and the old vehicles being poorly maintained (Table 6.3). Overcrowding occurred mostly on routes that were used often by tourists. Additionally, vehicle maintenance was the responsibility of the bus owners; hence, this depended on their efforts to look after their vehicles. The issue with 'time' was that the service was not punctual, and people at bus stops experienced long waiting times.

Negative comments regarding 'comfort' and 'time' increased after the reform (Figure 6.34). 'Comfort' was concerned mostly with the ambience on the buses due to the lack of air-conditioning, with the buses being too long – referring to the articulated buses, or with the bus drivers driving recklessly (Table 6.3).

Apart from the 6% of the time that the bus service was referred to as 'good', pre-reform, the only other factor that was mentioned in a positive manner was the fare structure.

‘Fare’ was generally referred to in a positive manner, excluding the instances when the bus drivers did not give the correct change (Table 6.3). On the old bus service, people paid the driver, who in turn, gave them a ticket; this procedure encouraged abuse from the bus drivers.

Comments regarding the fare structure were mentioned 7% of the time post-reform. Generally, these were negative remarks. Participants mentioned the need for a one-way ticket, and there were concerns that tourists were not paying the same fare as Maltese residents. Participants thought that this was unfair, and would affect negatively the tourist industry (Table 6.3). In fact, this issue was contested in the European Courts of Justice, and the verdict was that the fare had to be equal for everyone (Bajada & Titheridge 2016).

‘Accessibility’ was referred to 9% of the time (pre-reform). Concerns referred mostly to the need for improvement in the route network, and access for elderly people to board the bus. Post-reform, ‘accessibility’ was mentioned 18% of the time. Accessibility referred mostly to the need to increase the network coverage, have routes that were more direct, and reduce interchanges.

Pre-reform, the need for more information was referred to 5% of the time. Since the participants were Maltese residents, they knew the bus service and did not search for information. Post-reform, ‘information’ was mentioned 11% of the time. The possible reason for this is that the reformed bus service introduced new routes and new numbers of routes, and this was new to everyone, even Maltese residents. Information was either not available or was inaccurate, leading to confusion.

Pre-reform, issues related to ‘security’ were referred to 1% of the time. Comments about ‘security’ included the need to have CCTV cameras due to vandalism, and safety for passengers to avoid accidents, as drivers did not wait for passengers to sit down before proceeding with their journey (Table 6.3).

After the reform, ‘security’ was referred to 2% of the time. The reason for this new concern was that buses seemed to be more involved in road accidents than before; even

the media reported these happenings in several instances (Times of Malta 2012a, 2012b, Malta Today 2015).

Evidence from the Malta Police road accident data supports the reports of an increased number of accidents. The road injury accidents provided by the Malta Police Force between January 2010 until December 2012 (thus including the year before and the year after the bus service reform), indicate that after the bus service reform, there was a 66% increase in injury accidents involving buses (Malta Police Force 2010, 2011, 2012). However, this information should be interpreted with caution, and with relevance to the Maltese context. While the actual number of injury accidents is small (15 injury accidents before the reform and 25 injury accidents after the reform), given the small size of Malta, these figures are substantial.

Table 6.3 Maltese Residents' Open-ended Comments - Pre-and Post-Reform

| Factor | Reform | Participant Index # | Comment |
|---|---|---|---|
| Expectations | *Pre* | 761 | "Let's hope that the new bus service is more customer friendly than today's" |
| | | 1669 | "The change of the current vehicles will hopefully improve the service" |
| Comfort | *Pre* | 4152 | "Seats are scratchy, and windows do not open". |
| | *Post* | 727 | "All buses should have air condition working" |
| | | 737 | "Buses too large. Drivers speed a lot sometimes" |
| Time | *Pre* | 2081 | "Waiting time at bus stops should be reduced". |
| Fare | *Pre* | 335 | "The existing service is not good except for the fare price" |
| | | 398 | "Drivers should give correct change." |
| | *Post* | 1012 | "Should introduce one-way ticket. It is absolutely not fair that tourists have to pay more. We do not pay more when we go abroad." |
| Security | *Pre* | 4758 | "There should be CCTV cameras on stops because of vandalism." |
| | | 1939 | "Drivers should give enough time for passengers to be able to sit down." |
| Impact on the Environment | *Pre* | 3077 | "Current buses should pollute less." |
| | | 3554 | "The old buses pollute a lot." |
| Information | *Post* | 159 | "Information on routes should be more user-friendly for the elderly people as it is too difficult to understand" |
| | | 534 | "Information on bus stops is not accurate. On boards, it states "bus arriving in 5 minutes". The information is not correct, so it's useless". |
| Accessibility | *Post* | 1539 | "Routes should be changed as they were with the old service." |
| | | 499 | "Network coverage should increase." |

### 6.5.2 Tourists

Eight percent of the tourist participants thought that a change in the bus service was necessary. Of the comments that referred to the bus service as good, 6% were pre-reform and 7% post-reform (Figure 6.35).

Before the bus service reform, the tourist participants had mixed feelings about the fleet. Figure 6.35 shows that 'fleet' was mentioned 12% of the time. Most of the participants wanted the old fleet to improve; there were other tourists, however, who wanted the new operator to retain the old buses (Table 6.4). The possible reason behind this result was that the buses were mostly vintage vehicles that were custom-built by their owners. Hence, people who were vintage-vehicle enthusiasts thought that these vehicles should be used, as they were part of Maltese culture and were a characteristic of Malta.

Issues related to customer care seemed to decrease after the bus service reform, as these were mentioned only 4% of the time compared to 16% before the reform. This finding suggests that there was an improvement in staff manners.

Similarly, there was a reduction in the number of comments regarding the impact on the environment with a negligible percentage frequency (Figure 6.35). Since the new bus service operated with vehicles that were Euro V compliant, this service quality requirement improved the level of pollution.

Before the reform, 12% of the comments were regarding 'accessibility'. The comments were generally positive (Table 6.4), praising the fact that there were few interchanges. The buses were also *"very easy to catch"* (Tourist, index number 239), and the bus stops were *"very reachable"* (Tourist, index number 242). Some comments, however, mentioned the need for more direct routes (Table 6.4).

Table 6.4 Tourists' Open-ended Comments - Pre-and Post-Reform

| Factor | Reform | Participant Index # | Comment |
|---|---|---|---|
| Fleet | *Pre* | 46 | "It is a pity that the buses will be changed." |
| | | 80 | "It's a pity that the characteristic buses will be changed." |
| | | 214 | "The old buses need to be changed, too slow and noisy." |
| Accessibility | *Pre* | 215 | "Good network coverage." |
| | | 232 | "Having Valletta as a centre is very good." |
| | | 239 | "Very easy to catch buses and reach destination, no interchange confusion. Well done." |
| | | 208 | "More direct buses from Mellieha!" |
| | | 266 | "Bus to the airport should be from more places, not only Valletta." |
| Comfort | *Pre* | 19 | "Personal space on bus should be increased." |
| | | 56 | "Leg space should be increased." |
| | | 233 | "Buses need to be cleaned more often." |
| | *Post* | 67 | "Sometimes it was crowded." |
| | | 26 | "Drive slower when buses are crowded!" |
| | | 84 | "All buses should have a/c working. |
| Fare | *Pre* | 54 | "Price is very good." |
| | | 339 | "Much more affordable than renting a car or taxi." |
| | | 345 | "Not expensive." |
| | *Post* | 358 | "Equal pricing." |
| | | 364 | "Fare equal among locals and tourists." |
| Impact on the Environment | *Pre* | 24 | "Emissions should be reduced." |
| | | 17 | "Negative impact on the environment should be reduced." |
| Security | *Post* | 163 | "Better if drivers are trained more to drive slower!" |
| | | 186 | "Fewer accidents! Vehicles are all dented!" |

The tourist participants before the reform were not happy with the level of comfort on the buses. Comfort was mentioned 10% of the time (Figure 6.35), and the comments about 'comfort' were negative, particularly regarding personal space, leg space, and cleanliness (Table 6.4). Another issue regarding comfort was that the bus stops were not adequate to offer protection from *"sun, rain, and wind"* (Tourist, index number 251).

After the reform, 'comfort' was mentioned 15% of the time. Issues regarding comfort involved overcrowded buses, the need to have the air-conditioning switched on, and reckless bus driving (Table 6.4).

Before the reform, the factor 'information' was mentioned 4% of the time (Figure 6.35). Tourist participants required more information at bus stops and on board the buses. After the reform, information was mentioned 11% of the time. The tourists' concerns

post-reform were similar to the pre-reform situation; they needed more information, and when information was available, it was necessary to keep it updated.

Five percent of the comments referred to the ‘fare’ as good pre-reform (Table 6.4). After the reform, 7% referred to ‘fare’ (Figure 6.35). These comments mostly were regarding the need to buy tickets from machines before boarding the bus – a change that eventually was implemented with the new company in 2015 (Bajada & Titheridge 2016). Other comments were regarding the issue that foreigners were paying more than the Maltese residents (Table 6.4).

An issue that emerged after the reform was ‘security’. Tourists mentioned this issue 2% of the time (Figure 6.35). However, this issue was not mentioned before the reform. Comments on ‘security’ were with regard to accidents deriving from bus driver behaviour (Table 6.4).

## 6.6 Summary of Findings - Exploratory Analysis

Overall, this chapter shows that the bus service reform had one major issue: ‘time’. Before the reform in some instances, this issue was already reported as being a concern; however, after the reform, problems with punctuality and reliability increased. This does not mean that the other factors improved; rather the issue with ‘time’ surpassed all the other issues.

### 6.6.1 Intentions

After the reform, tourists were more positive than were Maltese residents regarding their intentions to use the bus. Maltese residents who intended to use the bus had no alternative mode of transport available.

Accessibility was another reason why they intended to use the bus. This could possibly also be linked with the ‘no alternative’ option. As defined in Chapter 2, sub-section 2.8.1, accessibility increases the opportunity for people to reach destinations. Opportunities could possibly affect people’s decision on whether to use the bus.

Tourists, too, might have no other mode of transport available from which to choose. Additionally, tourists value their time differently from the people of the host country. The latter would mostly be commuting or carrying out errands in restricted timeframes. Tourists, on the other hand, would have more time available because they would be performing a leisure activity.

### 6.6.2 Attitudes

Attitude ratings included all mode users. The overall attitude ratings showed improvement after the reform.

However, some new issues emerged after the reform. Such problems included the factors 'security' and 'comfort'. These two factors were linked, because they were mainly related to the bus drivers' manner of driving, which also caused accidents.

Comfort-related issues also persisted in relation to temperature conditions on the bus, crowding on the bus, and driving speed and manner. As mentioned above, the latter was also linked to security, because the passengers did not feel safe on the bus.

Lack of information was a recurring problem for tourists, which also became an issue for the Maltese residents after the reform, because of the radical changes to information and the limited or complete lack of information. Issues with information were associated with the lack of updates, the accuracy of information, and the lack of information at bus stops.

The bus service reform provided some positive outcomes. The pollution from exhaust fumes emitted by the buses decreased, and the new low-floor vehicles allowed passengers easy access to board the bus, thus improving comfort.

### 6.6.3 Expectations

Expectations are subjective because they form according to people's experience or in addition to experience, based on people's perceptions. Interestingly, Maltese resident car users had more expectations than had bus users. Those car users who had high

expectations intended to use the bus. When they said so, however, they included a condition, for example, that they would use the bus if timing were punctual.

Tourist participant expectations were more positive than were those of the Maltese residents. For tourists, ‘time’ was also the most mentioned factor, although the tourist sample had both positive and negative comments regarding ‘time’. The overall ratings on ‘time’ were that tourists expected a potentially successful bus service to be punctual and to have reduced waiting times at the bus stop.

The next four chapters present more detailed quantitative and qualitative analyses related to these findings.

# Chapter 7 Impact of Bus Reform on Factors that Influence Behaviour

This chapter addresses the highlighted parts of the conceptual model (Figure 7.1), and answers research questions 1 and 2:

- RQ1: How did attitudes, perceived confidence, capability, and opportunity influence the intention to use the bus before and after the reform?

- RQ2: How did the bus reform change attitudes and perceived confidence regarding using use the bus?

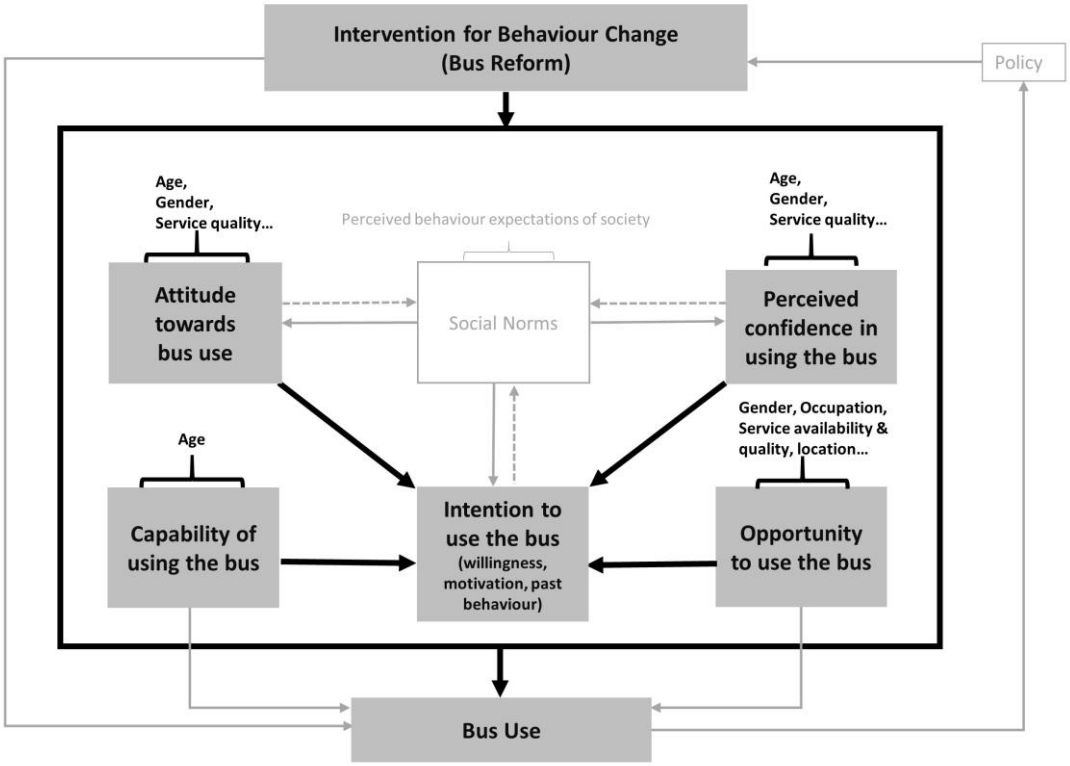


Figure 7.1 Combined factors of the proposed conceptual model that relate to RQs 1 and 2

Section 7.1 answers RQ 1, and section 7.2 answers RQ 2. The questionnaire data are used to answer these research questions.

## 7.1 Intentions

In the conceptual model, common variables feature in the different factors that might influence behaviour. For instance, 'age' is a variable that influences three factors: 'attitudes', 'perceived confidence', and 'capability'. Table 7.1 shows the variables used to measure intentions for Maltese residents and tourists. These are grouped under geo-demographic, socio-economic, and service quality variables.

Table 7.1 Variables used to measure intention

| Variables | | Data Type | Maltese residents | Tourists |
|---|---|---|---|---|
| Geo-demographic | Age | Nominal | ✓ | ✓ |
| | Gender | | ✓ | ✓ |
| | District origin | | ✓ | ✓ |
| | District destination | | ✓ | x |
| Socio-economic | Occupation | Nominal | ✓ | x |
| | Reason for visiting | | x | ✓ |
| | Length of stay | | x | ✓ |
| | Accommodation | | x | ✓ |
| Service Quality | Accessibility | Ordinal | ✓ | ✓ |
| | Information | | ✓ | ✓ |
| | Time | | ✓ | ✓ |
| | Fare | | ✓ | ✓ |
| | Customer care | | ✓ | ✓ |
| | Comfort | | ✓ | ✓ |
| | Security | | ✓ | ✓ |
| | Impact on the Environment | | ✓ | ✓ |
| Mode use | Bus | Nominal | ✓ | ✓ |
| | Car | | ✓ | x |
| | Hired Car | | x | ✓ |
| | Private Coach | | x | ✓ |
| | Other | | ✓ | ✓ |

✓ measured
x not measured

Regarding the factor opportunity, three additional variables are used as indicators for opportunity (Chapter 3, section 3.7). The first variable is 'perceived time taken to reach destination', and the other two variables are based on preference – 'preferred walking distance to bus stop', and 'acceptable number of bus connections'. Data collected for these three variables are nominal.

Another variable that is used to measure intention is 'mode use'. Although mode use is not included in Figure 7.1, here it is assumed that the mode that the participants generally use might influence their intentions to use the bus.

Most of the variables used to analyse intention are nominal (Table 7.1). Pearson's Chi-Squared tests ($X^2$) (Pearson 1900) are used to test dependences between the variables.

Exploratory analysis (Chapter 6, section 6.2) suggests that after the reform, Maltese residents showed a slight increase in intention to use the bus. This finding may be influenced by the fact that post-reform, the majority of the participants were females and from the 60+ age group. However, even tourists intended to use the bus after the reform.

### 7.1.1 Components that influence Intentions

When asking participants about intentions, it was assumed that bus users would continue to use the bus. Consequently, for Maltese residents, the question was specifically addressed to non-bus users. Amongst the car users, there were car passengers, who occasionally used the bus, hence the option 'use bus already'. Regarding tourists, all mode users were asked this question.

*Mode use*

Pearson correlations (*r*) were initially performed to identify the link between mode use and intention to use the bus. Table 7.2 shows the results for the pre-and post-reform data for both Maltese residents and tourists.

Table 7.2 Pearson correlation between intention and mode use

| | | Pearson Correlation |
|---|---|---|
| Maltese residents | Pre-reform | -0.013 |
| | Post-reform | 0.015 |
| Tourists | Pre-reform | **0.138*** |
| | Post-reform | **0.217*** |

*. Correlation is significant at the 0.01 level (2-tailed).

The results for Maltese residents were not statistically significant (Table 7.2) while the results for tourists were statistically significant at the 99% confidence level (Table 7.2).

The Pearson correlations for tourists (Table 7.2) indicate a small effect, suggesting a minor positive association between tourists (using all modes) and their intentions to use the bus, pre-and post-reform.

Tourist data were analysed further. The questionnaire specifically requested either a 'yes' or a 'no' as an answer. In the pre-reform questionnaire, however, 1% of the participants specifically stated that they were 'unsure'. Participant #397 stated, *"Can't tell what I might decide to do in the future"*. Although this was a low percentage, this opinion was acknowledged and was included in the analysis. The fact that tourists were 'unsure' suggests that intentions might vary according to circumstances.

Figure 7.2 shows the intentions to use the bus by mode pre- and post-reform. The Chi-Square tests ($X^2$) for tourists resulted in a significant association between mode use and intentions to use the bus (pre-reform: $X^2 = 72.17$, p = 0.0001; post-reform: $X^2 = 39.60$, p = 0.0001) (Appendix I, Table I.1).


Figure 7.2 Tourists' intentions to use the bus – pre-and post-reform

Pre-reform tourist bus users mostly (93%) intended to use the bus (Figure 7.2). Post-reform, this group slightly reduced its intentions, by 2% (to 91%), while intentions to use the bus increased for all the other mode users. Figure 7.3 shows the levels of significance of the results for Figure 7.2. At the 95% confidence level, the interpretation of intention for mode users of buses and hired cars were the most significant.

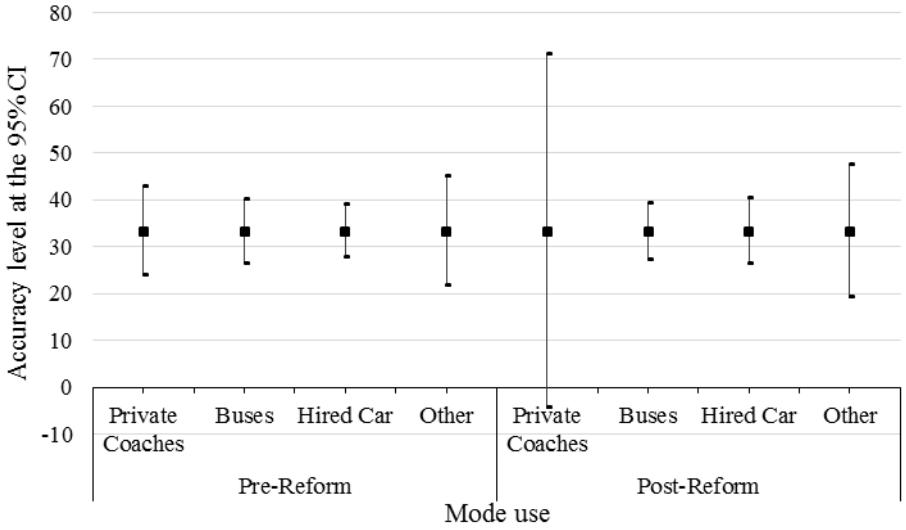


Figure 7.3 Statistical significance of tourists' intentions by mode – pre-and post-reform

*Geo-demographic variables*

Geo-demographic variables include age, gender, and district origin (Table 7.1). These three variables are applicable for both population samples. The variable district destination is applicable only for the Maltese residents.

Existing Maltese resident bus users were assumed to intend to use the bus in both the pre- and post-reform datasets. The analysis for Maltese residents was performed for non-bus users.

Table 7.3 shows the outcomes of the Pearson correlations for intention and the geo-demographic variables. The results in bold are statistically significant at the 99% confidence level. After the reform, tourists had minimal positive correlations between age and intention to use the bus (Table 7.3).

The $X^2$ were performed with a confidence level of 95%. Both pre- and post-reform datasets were statistically significant, suggesting that for tourists, the variable age slightly influences the intention to use the bus (pre-reform: $X^2$ = 26.8, p-value = 0.003 and post-reform: $X^2$ = 18.3 p-value = 0.003).

Table 7.3 Pearson correlations for Geo-demographic Variables

| | Reform | Age | Gender | District Origin | District Destination |
|---|---|---|---|---|---|
| Maltese residents | Pre | 0.014 | 0.001 | -0.066 | -0.064 |
| | Post | 0.115 | 0.038 | 0.056 | -0.009 |
| Tourists | Pre | **0.173*** | -0.052 | -0.008 | - |
| | Post | **0.148*** | -0.060 | 0.017 | - |

* Correlation is significant at the 0.01 level (2-tailed)

Pearson Chi-Square tests (Pearson 1900) were further performed for tourists' intentions to use the bus with age categories. Overall, pre- and post-reform, tourists intended to use the bus (Figure 7.4, Appendix I Table I.2).

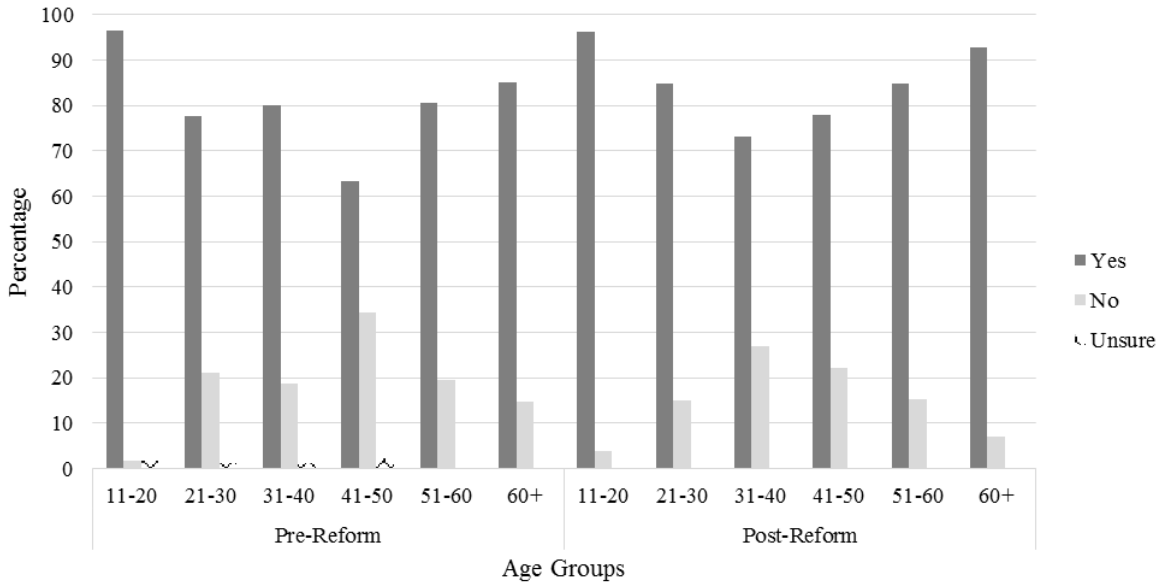


Figure 7.4 Tourists' intentions to use the bus by age group – pre-and post-reform

Post-reform, there was an increase in intention amongst the age groups 21-30 (+7%), 41-50 (+15%), and 60+ (+8%). All age groups (Figure 7.5) had higher percentages of bus users.

The 41-50 age group had the highest percentage of hired car users (41%). Interestingly, this age group had the highest percentage increase of participants who intended to use the bus. The cross-tabulations (Appendix I, Table I.3) represented by Figure 7.5 were statistically significant at the 95% confidence level ($X^2$ = 65.5, p-value = 0.0001 at the 95% confidence level).

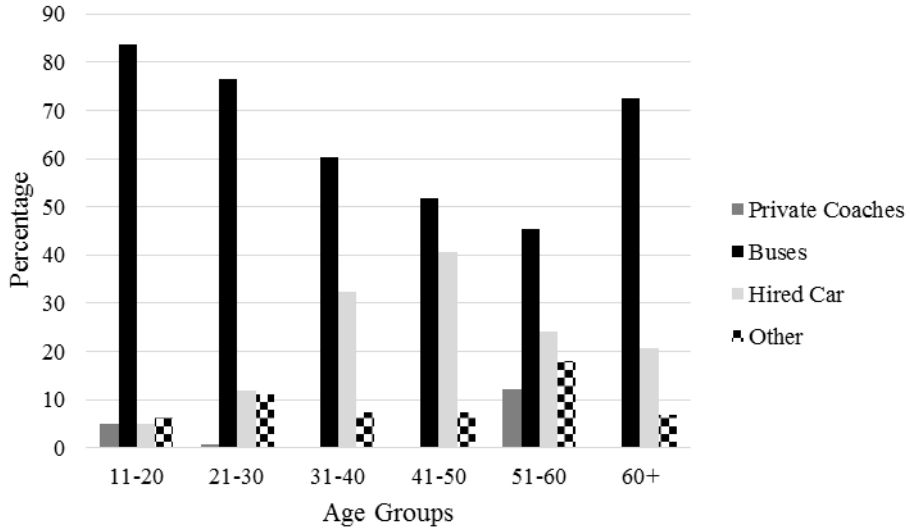


Figure 7.5 Mode use by age groups – Tourists, post-reform

*Socio-economic variables*

The socio-economic variables are 'occupation' (for Maltese residents), and 'reason for visiting', 'length of stay', and 'accommodation' (for tourists) (Table 7.1). As in the previous case, the analysis for Maltese residents included only the sub-group non-car users. The Pearson correlations for occupation and intentions to use the bus were not statistically significant at the 95% confidence level (pre-reform $r$ = 0.0001, p-value = 0.999, post-reform $r$ = 0.063, p-value = 0.312).

In the tourist datasets, only the variable length of stay (post-reform: $r$ = 0.121, p-value = 0.017) was statistically significant at the 95% confidence level (Table 7.4). This means that for tourists post-reform, there is minimal positive correlation between length of stay and the intention to use the bus. The results of the $X^2$ test were not statistically significant at the 95% confidence level ($X^2$ = 6.35, p-value = 0.174). Hence, neither of

the datasets (Maltese residents and tourists) the socio-economic variables influence the intention to use the bus.

Table 7.4 Pearson correlations for intentions with socio-economic variables – Tourists

| Reform | Reason for Visiting | Length of Stay | Accommodation |
|---|---|---|---|
| Pre | 0.001 | 0.077 | 0.054 |
| Post | 0.063 | **0.121*** | 0.096 |

*Correlation is significant at the 0.05 level (2-tailed)

*Service quality*

The exploratory analysis in Chapter 6 section 6.3 revealed the ratings given to the eight pre-defined bus service quality characteristics, for both Maltese residents and for tourists.

Participants who were not aware how to evaluate the service quality characteristics could select 'don't know'. Table 7.5 reveals the percentages of the participants who did this. The highest percentages who selected 'don't know' were for Maltese residents post-reform (30%), and tourists pre-reform (36%).

Table 7.5 Percentage of participants who selected don't know

| | Reform | Don't know (%) |
|---|---|---|
| Maltese residents | Pre | 8 |
| | Post | 30 |
| Tourists | Pre | 36 |
| | Post | 25 |

To evaluate the influence of intentions with the ratings given to the bus service quality characteristics, the ratings in this case are considered as nominal (Agresti 2007). This decision derives from the assumption that a variable is only considered ordinal when the researcher declares it as such (Anglim 2009). This decision helps to identify any relations between ratings and mode use, using Chi-Square tests.

Table 7.6 shows the labels given to each category. The category '3', labelled as 'unsure', indicates that participants had a neutral opinion about the bus service.

Table 7.6 Labels for nominal categories – opinion about bus service quality

| Category | Label |
|---|---|
| 1 | Worst |
| 2 | Nearly the worst |
| 3 | Unsure |
| 4 | Nearly the best |
| 5 | Best |
| 6 | Don't know |

For Maltese residents, the analysis was performed on the sub-group non-bus users. Some car passengers stated that sometimes they used the bus, hence the option 'use bus already'. For the tourist sample, all mode users were included in the tests.

Table 7.7 shows the correlations that were statistically significant at the 95% confidence level for Maltese resident non-bus users pre- and post-reform. Before the reform, the participants' opinions about security had slight negative correlations with intention. After the reform, the Maltese resident non-bus users' opinions about information and impact on the environment had slight positive correlations with intention.

Table 7.7 Pearson correlations for intentions with service quality characteristics – Maltese residents

| Reform | Information | Security | Impact on the Environment |
|---|---|---|---|
| Pre | - | -0.148 | - |
| Post | 0.156 | - | 0.131 |

Correlations significant at the 0.05 level (2-tailed).

Chi-Square tests were performed on these three service quality characteristics with intention. Figure 7.6 shows the Maltese resident non-bus users' intention to use the bus and their opinion about security before the reform. The Chi-Square test result indicates a slight influence (at the 95% confidence level) on the intention to use the bus ($X^2$ = 18.78, p-value = 0.043). Participants who did not intend to use the bus thought that before the reform, security was 'nearly the best' (34%). Hence, this finding suggests that security is not a deciding factor that influences intention. Participants who already

used the bus considered security as ‘the best’, and ‘nearly the best’ (75% collectively). This suggests that car passengers were mostly positive about security; however, 25% considered security as nearly the worst before the reform.

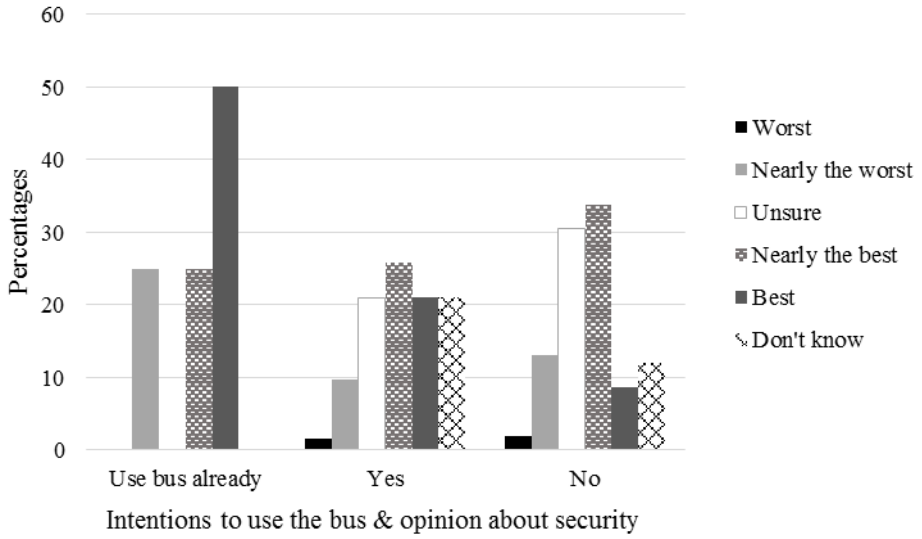


Figure 7.6 Intention to use the bus and opinion about security – Maltese resident non-bus users pre-reform

Post-reform, the correlations that were statistically significant at the 95% confidence level with intention to use the bus were ‘information’, and ‘impact on the environment’ (Table 7.7). In both cases, $X^2$ values were statistically significant at the 95% confidence level (Table 7.8). The $X^2$ values in Table 7.8 show minimal influence of the Maltese resident non-bus users’ opinion about ‘information’ and ‘impact on the environment’ on ‘intention’. Figure 7.7 and Figure 7.8 illustrate the column graphs following cross-tabulations (Appendix I, Tables I.4 & I.5) between intention and information, and impact on the environment.

Table 7.8 Chi-Square test results for Maltese resident non-bus users’ opinion and intention, post-reform

| | Information | Impact on the Environment |
|---|---|---|
| $X^2$ | 24.2 | 31.7 |
| p-value | 0.007 | 0.0001 |

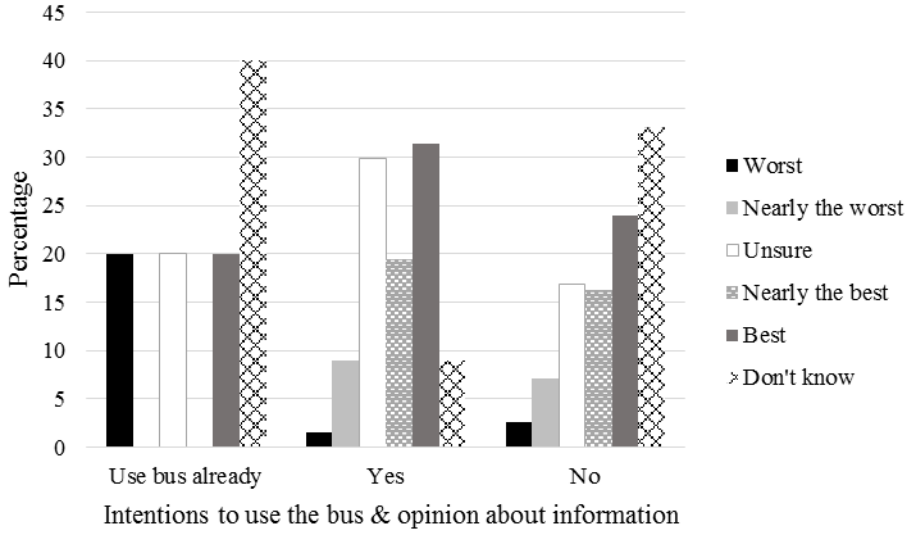


Figure 7.7 Intention to use the bus and opinion about information – Maltese resident non-bus users, post-reform

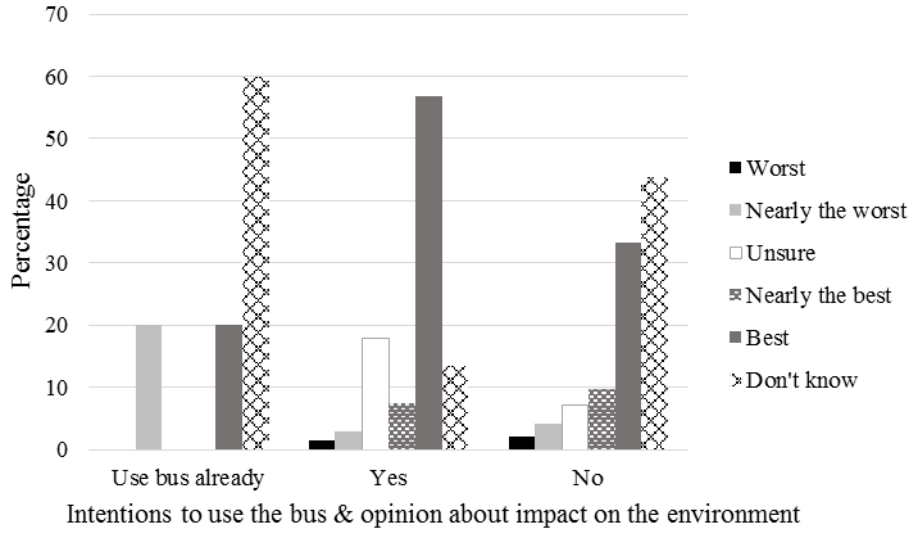


Figure 7.8 Intention to use the bus and opinion about impact on the environment – Maltese resident non-bus users, post-reform

Post-reform, non-bus users who occasionally used the bus did not have an opinion about information (40%) (Figure 7.7). Out of the same sub-group, 20% were unsure about information, and another 20% considered it as the worst. Another 20%, however, considered information as the best. Consequently, it seems that occasional bus users generally had mixed feelings about information after the reform. Non-bus users who intended to use the bus thought that information after the reform was nearly the best and the best (collectively, 50%). Even those participants who did not intend to use the bus

(collectively, 40%) had a positive opinion about information. Thirty-three percent of the non-bus users who did not have an opinion about the bus did not intend to use it.

Sixty percent of the non-bus users who occasionally used the bus did not have an opinion about the impact on the environment (Figure 7.8). The lack of concern about the environment amongst this group suggests that they used the bus out of necessity. Those non-bus users (64%) who thought positively ('nearly the best' and 'the best') about the impact on the environment after the reform intended to use it (Figure 7.8). Potentially, the positive outcome of the reform on this service quality characteristic encourages Maltese residents' intentions to use the bus.

Pearson correlations were performed for the tourist sample to identify the relationship between intentions to use the bus and opinion about the bus service, pre- and post-reform. Table 7.9 shows the correlations that were statistically significant at the 99%, and the 95% confidence level, as marked.

Table 7.9 Pearson correlations for Tourists' opinion and intention, pre- and post-reform

| | Accessibility | Information | Time | Customer care | Fare | Comfort | Security | Impact on the environment |
|---|---|---|---|---|---|---|---|---|
| Pre-reform | .364** | .364** | .340** | .334** | .342** | .356** | .391** | .261** |
| Post-reform | - | - | .168** | .135** | - | - | - | .105* |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Chi-Square tests were performed to identify whether the tourists' opinions about the bus service quality characteristics influenced their intention to use the bus. Cross-tabulations were performed for the correlations that were statistically significant. The outcomes of the cross-tabulations before and after are compared. Table 7.10 shows the Chi-Square test results for the tourists' opinion and intention, pre- and post-reform.

Appendix I includes the column graphs of the relations for the tourists' intentions to use the bus before the reform and their opinion about the service quality characteristics ('accessibility', 'information', 'fare', 'comfort', and 'security') (Figures I.1 to I.5). Before the reform, 60% of the tourists who intended to use the bus had a positive

opinion about accessibility. Out of those who thought that accessibility was nearly the best, 20% were unsure about their intentions to use the bus.

Table 7.10 Chi-Square test results for the tourists' opinion and intention, pre-and post-reform

| | Service Quality Characteristics | $X^2$ | p-value* |
|---|---|---|---|
| Pre-reform | Accessibility | 117.1 | 0.0001 |
| | Information | 126.8 | 0.0001 |
| | Time | 141.9 | 0.0001 |
| | Customer Care | 121.3 | 0.0001 |
| | Fare | 121.0 | 0.0001 |
| | Comfort | 118.5 | 0.0001 |
| | Security | 106.3 | 0.0001 |
| | Impact on the Environment | 76.8 | 0.0001 |
| Post-reform | Time | 51.8 | 0.0001 |
| | Customer Care | 49.2 | 0.0001 |
| | Impact on the Environment | 18.7 | 0.001 |

*Correlations statistically significant at the 95% confidence level

The tourists who did not have an opinion about 'accessibility' either 'did not intend to use the bus' (68%) or were 'unsure' (80%); only 13% intended to use the bus. In all cases when the tourists did not have an opinion about information, fare, comfort, and security (Appendix I, Figures I.1 to I.5), the percentages were relatively high for not intending to use the bus and their level of certainty of using the bus. These percentages varied between 71% and 80%. Figures I.1 to I.5, in Appendix I, also show that generally the tourist participants who chose the ratings 'the best' and 'nearly the best' intended to use the bus.

Figure 7.9 to Figure 7.11 show the column graphs for the relationships for the tourists' intentions and their opinions on time, customer care, and impact on the environment, pre- and post-reform. In each case, in both the pre- and post-reform scenarios, the tourists who did not have an opinion about the bus service ('don't know') were mainly either 'unsure' (pre-reform) or 'did not intend to use the bus'. Cross-tabulations are available in Appendix I Tables I.6 to I.8.

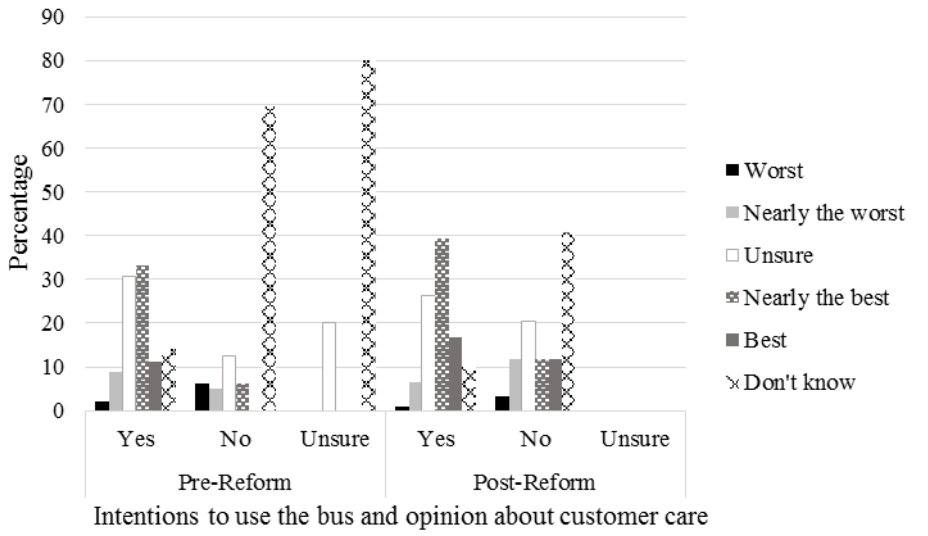


Figure 7.9 Intentions to use the bus and opinion about time – Tourists, pre-and post-reform

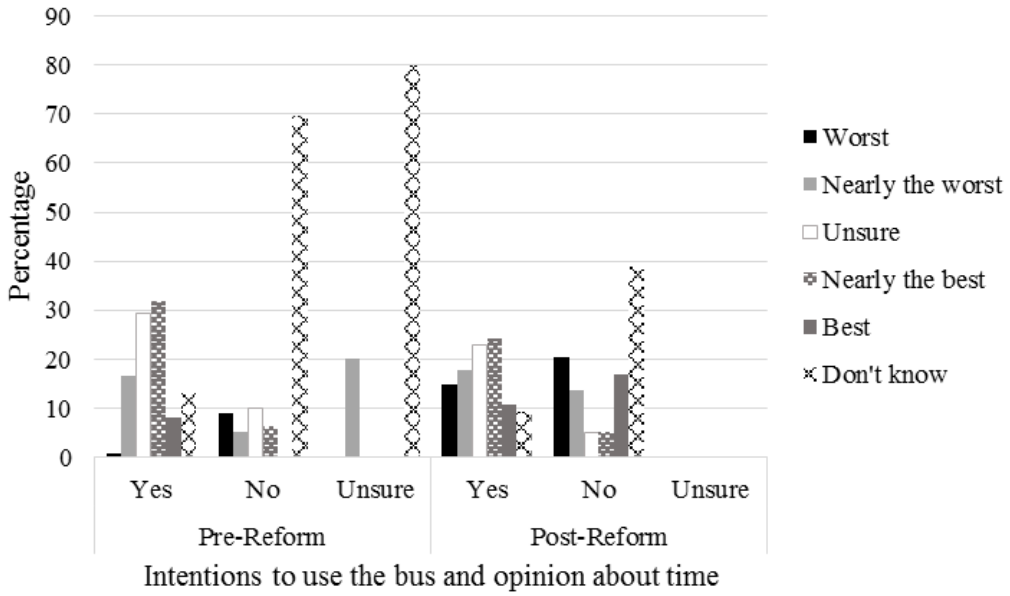


Figure 7.10 Intentions to use the bus and opinion about customer care – Tourists, pre- and post-reform

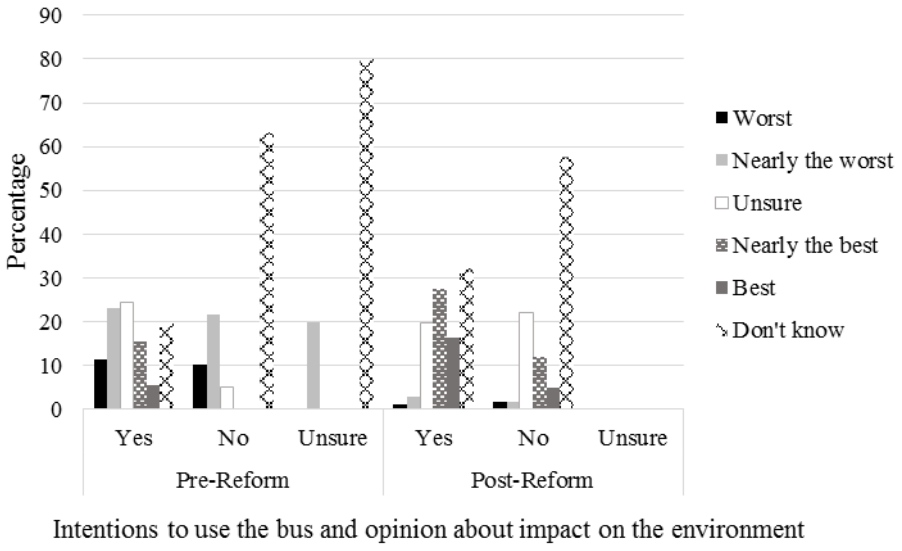


Figure 7.11 Intentions to use the bus and opinion about impact on the environment – Tourists, pre-and post-reform

The tourists with an overall positive opinion ('nearly the best' and 'the best'), generally intended to use the bus. These findings imply that positive opinions overall lead to positive intentions to use the bus.

*Relative opportunity*

Understanding how participants perceive and prefer opportunity is essential to understand what influences their intentions, as opposed to what actually exists. 'Perceived time taken to reach the destination' refers to the time that participants think that they take to reach the locality to which they frequently travel, e.g., for commuting, using their frequently used mode of transport, e.g., car or bus. 'Preferred bus stop distance' and 'acceptable amount of bus connections' refer to the personal preference regarding walking to the bus stop from home or from the accommodation (in the case of tourists), and personal preference regarding the number of interchanges that need to be made.

Table 7.11 shows the Pearson correlations for each of the three measures with the intention to use the bus. The Maltese residents do not include bus users.

As indicated in Table 7.11, there seems to be a slight correlation for the tourists' intention pre-reform with the acceptable number of bus connections. Chi-Square tests were performed for the tourist datasets with acceptable number of bus connections and intentions to use the bus. Before the reform, the acceptable number of bus connections had some effect on intentions to use the bus ($X^2$ = 43.3, p-value = 0.0001).

Table 7.11 Pearson correlations for intentions with measures for relative opportunity

| | Reform | Perceived time taken to | Preferred bus stop distance | |
|---|---|---|---|---|
| Maltese residents | Pre | 0.109 | 0.052 | -0.073 |
| | Post | -0.021 | 0.054 | -0.096 |
| Tourists | Pre | -0.087 | 0.021 | **-0.204*** |
| | Post | -0.074 | 0.015 | -0.025 |

*Correlation is significant at the 0.01 level (2-tailed)

Figure 7.12 shows the cross-tabulations (Appendix I, Table I.9) for the tourist datasets regarding their intentions to use the bus and the acceptable number of bus connections, pre- and post-reform. Pre-reform, tourist participants generally considered one interchange as acceptable, and out of those participants, 69% intended to use the bus (Figure 7.12).

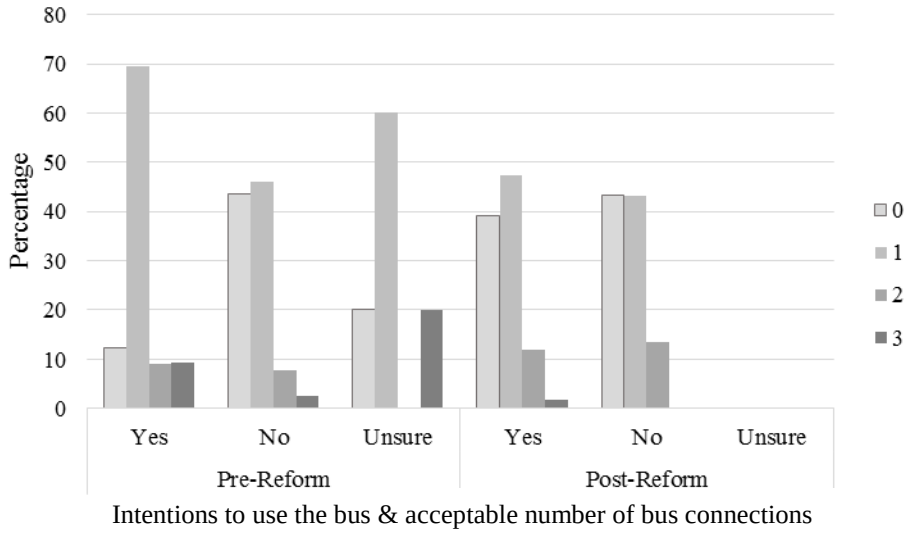


Figure 7.12 Intentions with acceptable number of bus connections - Tourists

After the reform, those participants who did not prefer bus connections increased by 27%, and those who preferred one interchange decreased by 22%. This finding suggests that opportunity might have slightly influenced the tourists' intentions to use the bus. The decrease in preference for the number of bus connections suggests that tourists wanted to reduce the time spent travelling, potentially either because of time-related issues or because of longer bus routes in the new bus service.

*Reported service delivery*

After the reform, questionnaire participants were asked to rate whether the new (Arriva) service was better than the old bus service. The ratings varied from '1' (agree strongly) to '6' (disagree strongly). Maltese residents agreed positively with this statement (Chapter 6, section 6.2.2). The overall percentage agreement was 71%. When this opinion was compared with intentions, 73% of those participants who agreed were already bus users, and 77% were non-bus users. This question is analysed further considering ratings as categorical, and hence nominal instead of ordinal (Agresti 2007), Table 7.12 shows the categories.

Table 7.12 Labels for nominal categories - opinion about the Arriva service

| Opinion about Arriva | Label |
|---|---|
| Agree Strongly | 1 |
| Agree Moderately | 2 |
| Agree Slightly | 3 |
| Disagree Slightly | 4 |
| Disagree Moderately | 5 |
| Disagree Strongly | 6 |
| Don't know | 7 |

A Pearson correlation was performed to identify whether there was a link between the Maltese residents non-bus users' intention to use the bus and their opinion about the delivery of the Arriva service compared to the PTA service. In this case, the result was not statistically significant at the 95% confidence level ($r$ = 0.050, p-value = 0.423). This finding suggests that actual bus use, that is, experience of using the bus, helps form an informed opinion about the bus service.

With regard to the tourist population sample, 75% agreed that the Arriva service was better than the PTA service. Tourists who had a positive opinion about the Arriva service intended to use the bus (Chapter 6, section 6.2.4); the overall percentage of positive agreement and intention to use the bus was 81%. Those tourist participants who 'agreed slightly', however, also had the highest percentage (36%) that 'did not intend to use the bus'.

A Pearson correlation was performed to analyse further the link between the tourists' opinion about the Arriva service and their intention to use the bus. Opinions were considered as categorical data (Table 7.12). The label for '7' referred to 'did not visit before the 3rd July 2011' (which is before the reform), which is equivalent to 'don't know'.

The result for the correlation was marginally statistically significant at the 95% confidence level ($r$ = 0.112, p-value = 0.027). Consequently, a Chi-Square test was performed to identify the relationship between the intention to use the bus and the opinion about the bus service. The result was statistically significant at the 95% confidence level, but there was a low strength of association ($X^2$ = 21.04, p-value = 0.002). Figure 7.13 shows the intention to use the bus and the opinion about the bus service, even for first-time visitors.

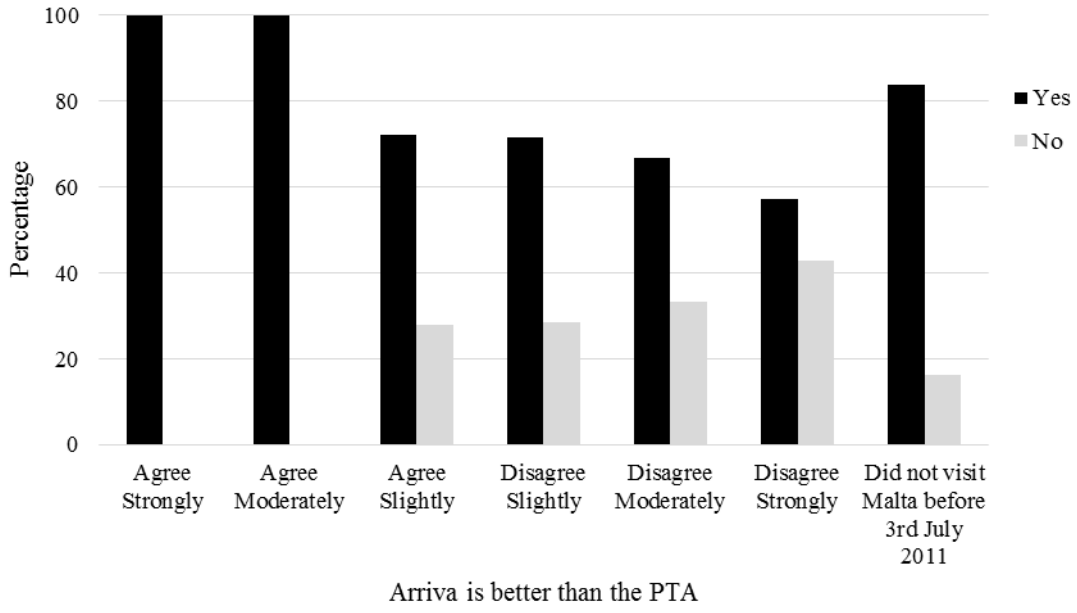


Figure 7.13 Intention to use the bus and the opinion about Arriva – Tourists

Eighty-four percent of the first-time visitors intended to use the bus if they were to visit Malta again (Figure 7.13). This finding suggests that either this sub-group is formed of captive bus users, or they were impressed by the positive bus service experience.

In this sub-group of first time visitors, 69% were bus users (Table 7.13). The intentions of this sub-group were further analysed. All private coach users who were first-time visitors intended to use the bus, as did 91% of the bus users, 53% of hired car users, and 88% of other mode users (Figure 7.14). Consequently, not all of this sub-group consisted of captive bus users.

Table 7.13 First time visitors by mode used

| First time visitors by mode used | | | | |
|---|---|---|---|---|
| | Private Coach | Buses | Hired car | Other |
| Percentage | 3 | 69 | 18 | 10 |

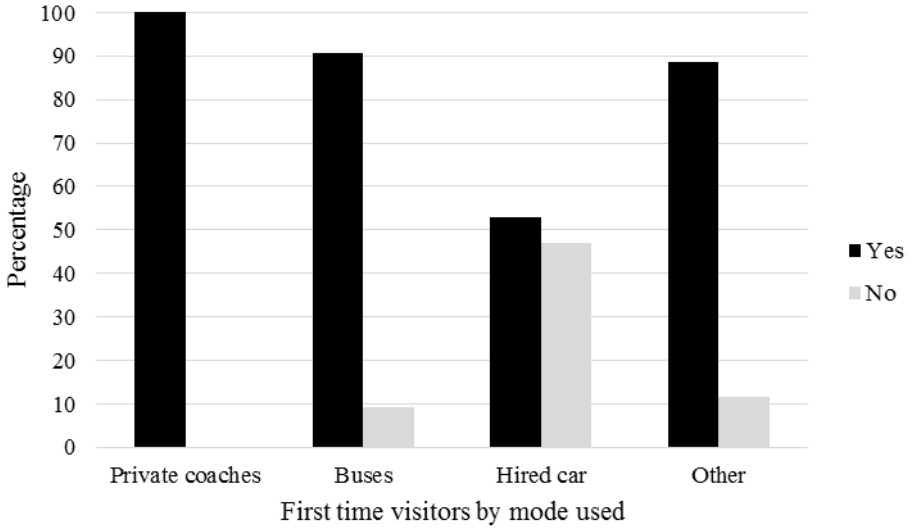


Figure 7.14 First time visitors by mode used and their intention to use the bus

*Expectations*

The Maltese and tourist participants were asked to rate whether the new (Arriva service) met their expectations. The ratings varied from '1' (agree strongly) to '6' (disagree strongly). They also had the option 'I did not have expectations'.

The two population samples indicated that 43% of tourists and 32% of Maltese residents did not have expectations (Chapter 6, section 6.4). Out of this sub-group, 32% were hired car users and 57% bus users (for tourists), and 81% car users and 13% bus users (for Maltese residents). The high percentage for Maltese car users suggests that they did not even consider the bus as an alternative option to their car.

Expectations varied for both Maltese resident bus and car users (Chapter 6, Figure 6.21). For tourists, this was the same only for bus users (Chapter 6, Figure 6.27).

This question was analysed further considering ratings as categorical, and hence nominal instead of ordinal (Agresti 2007). Table 7.14 shows the categories.

Table 7.14 Labels for nominal categories - expectations about the Arriva service

| Expectations about Arriva | Label |
|---|---|
| Agree Strongly | 1 |
| Agree Moderately | 2 |
| Agree Slightly | 3 |
| Disagree Slightly | 4 |
| Disagree Moderately | 5 |
| Disagree Strongly | 6 |
| I did not have expectations | 7 |

For Maltese residents, the interpreted results reflect non-bus users because as indicated in the previous cases, it was assumed that existing bus users intended to use the bus. The 'use bus already' option refers to car users who are passengers.

A Pearson correlation was performed to identify the link between the Maltese residents' and tourists' expectations about Arriva and their intention to use the bus. Both

population samples had correlations that were statistically significant at the 99% confidence level (Table 7.15).

Table 7.15 Pearson correlations for intentions with expectations about Arriva

| | Arriva met my expectations |
|---|---|
| Maltese residents | 0.192 |
| Tourists | 0.306 |

Correlations are significant at the 0.01 level (2-tailed)

Chi-Square tests were performed to identify the relationships between the intention to use the bus and the expectations about Arriva. For Maltese resident non-bus users, the intention to use the bus with expectations is questionable at the 95% confidence level ($X^2$ = 22.2, p-value = 0.05). The relationship is not less than 0.05; hence, the cross-tabulations are not interpreted further.

The relationship for the tourist participants is of medium strength ($X^2$ = 42.4, p-value = 0.0001). Figure 7.15 shows the relations between the tourists' intentions to use the bus and their expectations. Amongst the tourists who did not have expectations, 69% did not intend to use the bus, whereas 38% intended to do so. Fifty-four percent of the tourists who collectively agreed that Arriva met their expectations intended to use the bus, and only 19% of those who collectively disagreed did not intend to use the bus.

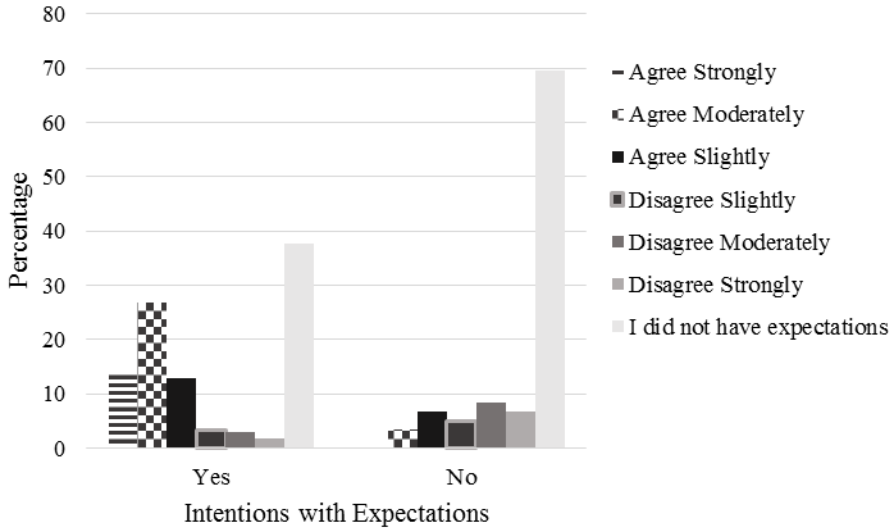


Figure 7.15 Intentions to use the bus and expectations - Tourists

### 7.1.2 Discussion – Intentions

Section 7.1 shows that intentions are influenced by several factors depending on the different population segments. This finding supports the idea of the proposed conceptual model that considers the complex behavioural relationships involved in bus reforms. Age was a common variable used to measure attitudes, perceived confidence, and capability.

For Maltese residents, however, this did not seem to influence intentions. Maltese residents' intentions were influenced only by their attitudes. Statistically significant results were available for security pre-reform, while post-reform, information and impact on the environment seemed to influence the intention to use the bus.

Tourist data showed that the modes of transport used and age groups influence intention to use the bus. Hence, for tourists, there is a possibility that attitudes, perceived confidence, and capability influence intention to use the bus.

The tourist population sample indicates the likelihood that bus users would intend to use the bus. The interpretation of this finding is that experiencing the bus service is important for intention. Similarly, regarding the overall service delivery, the more tourists who agreed that Arriva's service was good, the more the likelihood of the intention to use the bus increased.

The same happened for expectations; the more the service met the tourists' expectations the more likely they were to intend to use the bus. Undoubtedly, positive experiences lead to positive intentions towards carrying out a behaviour.

This finding on positivity was also observed within the Maltese residents' and tourists' opinions about the bus service quality and their intentions to use the bus. The more positive were the opinions, the stronger was the likelihood of the intention to use the bus.

The findings support Beirão and Sarsfield Cabral's (2007) research. Intention is a behavioural construct that is likely to influence behaviour, but once an unreliable service is provided, the intention to use the bus diminishes (Beirão & Sarsfield Cabral 2007).

## 7.2 Attitudes and Perceived Confidence

This section answers RQ2. Table 7.16 summarises the analytical methods used to identify what influences attitudes and perceived confidence.

Attitudes on the bus service were gauged using a Likert scale from 1 (worst) to 5 (best), and an option for 'don't know', indicated by the number six. In cases where Pearson Chi-Square tests (Pearson 1900) were performed, the Likert scale was considered as categorical, and hence nominal (Table 7.6).

The 'don't know' option is included in sections 7.2.1 and 7.2.2. Section 7.2.3 does not include the 'don't know option'. If this option were retained, the attitudes towards the service quality characteristics would be interpreted erroneously.

Table 7.16 Analytical methods for attitudes and perceived confidence – Maltese residents and Tourists, pre-and post-reform

| Sub-sections | Variables | Data Types | Don't know included | Analytical Method |
|---|---|---|---|---|
| 7.2.1 | Mode use & Service Quality Ratings* | Categorical & Ordinal considered Nominal | Yes | Pearson Correlation & Chi-Square test |
| 7.2.2 | Demographic & Service Quality Ratings* | Categorical & Ordinal considered Nominal | Yes | Pearson Correlation & Chi-Square test |
| 7.2.3 | Service Quality Ratings** & Demographic, Mode use | Ordinal & Categorical, Categorical | No | Factor Analysis, Kruskal Wallis & Mann Whitney U test |

* Considered as opinions that are influenced indirectly by variables

**Measured directly as attitudes

### 7.2.1 Impacts of Mode use on attitudes and perceived confidence

Mode use is included in the analysis to identify differences between bus users and non-bus users, and their attitudes towards the service quality. The analysis focuses on bus users, and refers to car users whenever necessary.

Table 7.17 shows the results of the Pearson correlations (*r*) used to identify the relations between mode use and the participants' opinions. It is assumed that these evaluations influence people's attitudes and perceived confidence towards the bus service and potential use. The results highlighted in bold are statistically significant; the level of significance is indicated at the bottom of Table 7.17.

Table 7.17 Pearson correlations for Mode use with Service Quality

| | | Maltese residents | | Tourists | |
|---|---|---|---|---|---|
| | Reform | Pre | Post | Pre | Post |
| Service Quality Characteristics | Accessibility | -0.041 | -0.016 | **0.145**** | **0.203**** |
| | Information | 0.047 | -0.031 | **0.221**** | **0.272**** |
| | Time | -0.002 | -0.097 | **0.184**** | **0.328**** |
| | Customer Care | -0.001 | **-0.106*** | **0.181**** | **0.288**** |
| | Fare | **0.137**** | -0.077 | **0.190**** | **0.153**** |
| | Comfort | -0.091 | **-0.189**** | **0.170**** | **0.275**** |
| | Security | -0.020 | -0.099 | **0.159**** | **0.171**** |
| | Impact on the Environment | **0.142**** | -0.020 | **0.153**** | **0.118*** |

**Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

*Maltese residents*

Pearson Chi-Square tests ($X^2$) were performed with a confidence level of 95% to identify the relationship between mode use and 'fare', and 'impact on the environment' (pre-reform). For the post-reform, $X^2$ tests were performed to identify the relationship between 'mode use' and 'customer care' and 'mode use' and 'comfort'.

Table 7.18 shows that for Maltese residents before the reform, there was a slight relationship between 'mode use' and 'fare', and 'mode use' and 'impact on the environment'. After the reform, the relationship was with 'customer care' and 'comfort'. Cross-tabulations were performed to identify which 'mode use' had the most positive and negative opinions about the service quality.

Table 7.18 Pearson Chi-square test results for mode use and service quality – Maltese residents, pre-and post-reform

| Reform | Pre | | Post | |
|---|---|---|---|---|
| Service Quality Characteristic | Fare | Impact on the Environment | Customer Care | Comfort |
| $X^2$ | 32.8 | 24.7 | 43.8 | 33.2 |
| p-value | 0.0001 | 0.006 | 0.0001 | 0.0001 |

Figure 7.16 shows that 83% (collectively nearly the best and the best) of bus users were positive about the fare before the reform, and 13% were 'unsure'. Amongst the car users and users of other modes, 'fare' was also considered nearly the best and the best. Before the reform, fare in Malta was perceived as good, because it was cheap (Attard 2005, Bajada 2015). Cross-tabulations are available in Appendix I, Table I.10.

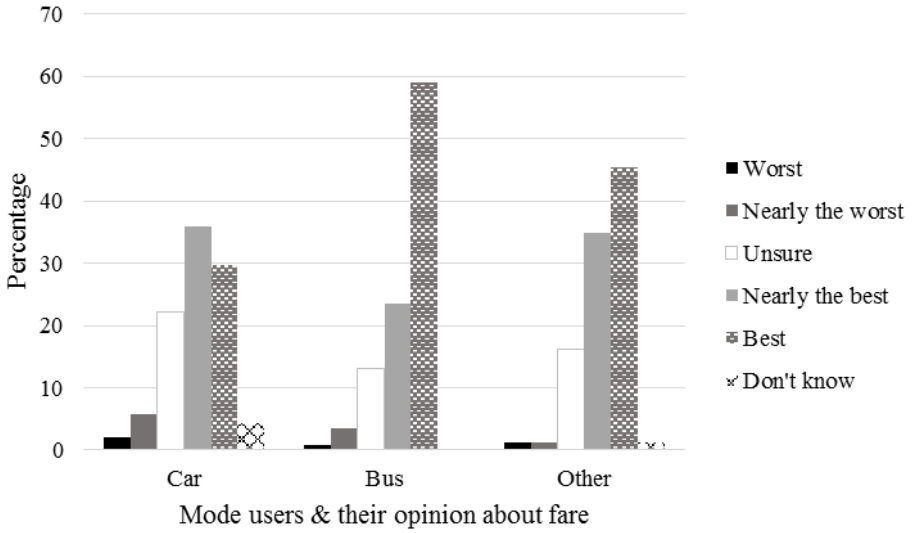


Figure 7.16 Mode users and their opinion about fare – Maltese residents, pre-reform

Regarding the 'impact on the environment' caused by the bus service, generally, all mode users considered it negatively. Bus users had more positive opinions than users of any of the modes about this characteristic. Interestingly, 53% (collectively the worst and nearly the worst) (Figure 7.17) of car users thought that the buses had a negative impact on the environment. Cross-tabulations are available in Appendix I, Table I.11.

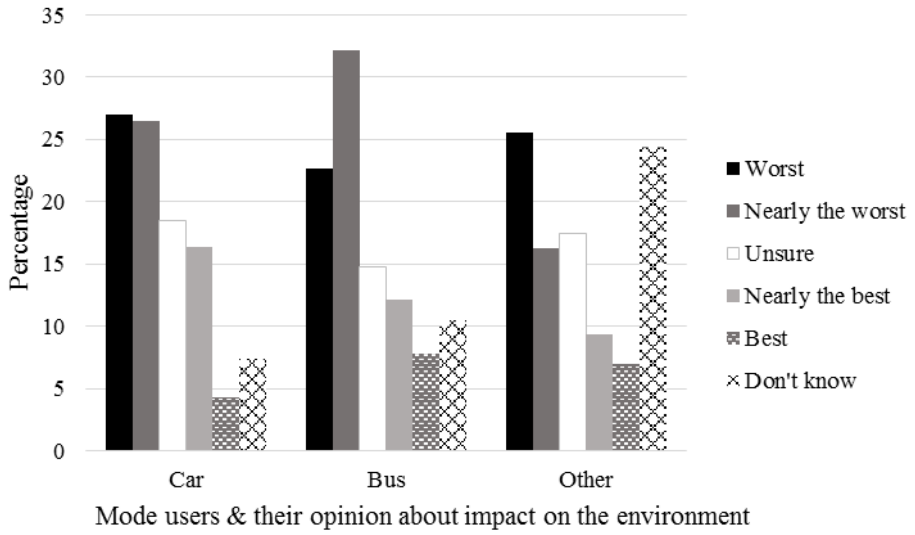


Figure 7.17 Mode users and their opinion about impact on the environment – Maltese residents, pre-reform

Post-reform, the relationship between mode use and the opinion about service quality was statistically significant for customer care and comfort (Table 7.16, Appendix I,

Tables I.12 and I.13). For bus users, customer care was the best (42%) and nearly the best (20%) (Figure 7.18).

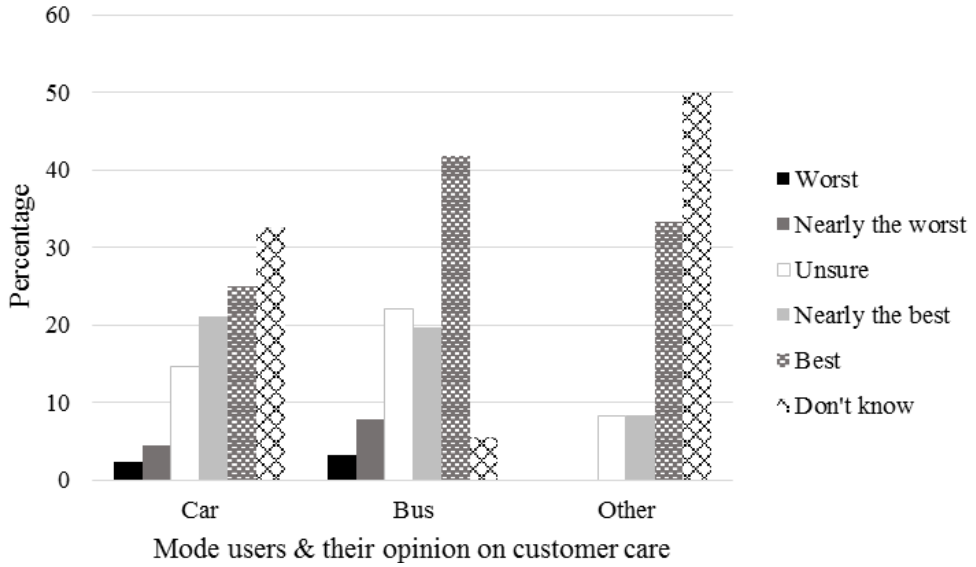


Figure 7.18 Mode users and their opinion about customer care – Maltese residents, post-reform

Generally, comfort was rated as the best (Figure 7.19). Users of all modes selected this rating. Interestingly, bus users (20%) were unsure about comfort.

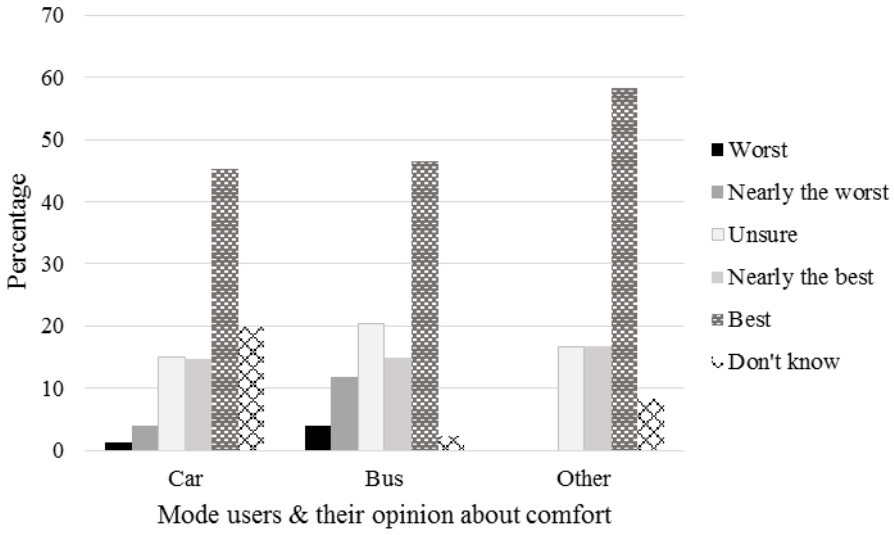


Figure 7.19 Mode users and their opinion about comfort – Maltese residents, post-reform

*Tourists*

In Table 7.17, all of the Pearson correlations were statistically significant for the tourist dataset. Consequently, Pearson Chi-Square tests ($X^2$) were performed with a confidence level of 95% to identify the relationship between mode use and all of the eight service quality characteristics, before and after the reform. The results of these tests are presented in Table 7.19.

Table 7.19 Pearson Chi-square test results for mode use and service quality – tourists, pre-and post-reform

| | Reform | Pre | | Post | |
|---|---|---|---|---|---|
| | Pearson Chi-Sq. Test Values | $X^2$ | p-value* | $X^2$ | p-value* |
| Service Quality Characteristics | Accessibility | 172.6 | 0.0001 | 160.0 | 0.0001 |
| | Information | 190.4 | 0.0001 | 155.3 | 0.0001 |
| | Time | 190.3 | 0.0001 | 193.3 | 0.0001 |
| | Customer Care | 183.0 | 0.0001 | 174.8 | 0.0001 |
| | Fare | 181.6 | 0.0001 | 174.4 | 0.0001 |
| | Comfort | 182.2 | 0.0001 | 189.5 | 0.0001 |
| | Security | 144.2 | 0.0001 | 114.7 | 0.0001 |
| | Impact on the Environment | 93.5 | 0.0001 | 63.6 | 0.0001 |

*Correlations statistically significant at the 95% confidence level

Cross-tabulations were performed for the pre- and post-reform datasets regarding mode use and service quality. The column graphs (Appendix I, Figures I.6 to I.13) indicate the opinions of the tourist mode users about each service quality, pre- and post-reform. Percentage changes of the opinions show the changes in the tourists' opinions as an impact of the reform. The significance of these percentage changes is illustrated at the 95% confidence level. Focus on the interpretation of the results will be on the bus users, and where necessary, the users of different modes will be included.

Figure 7.20 illustrates the percentage change between the post-reform and pre-reform opinions about accessibility by mode use. After the reform, opinions about accessibility by bus users did not change much. Those who were unsure decreased by 15%, and those who selected 'don't know' increased by 15%. Figure I.6 (Appendix I) shows that pre- and post-reform considered accessibility as nearly the best and the best. Figure 7.21 shows that the level of accuracy for the percentage change of bus users was accurate at the 95% confidence level.

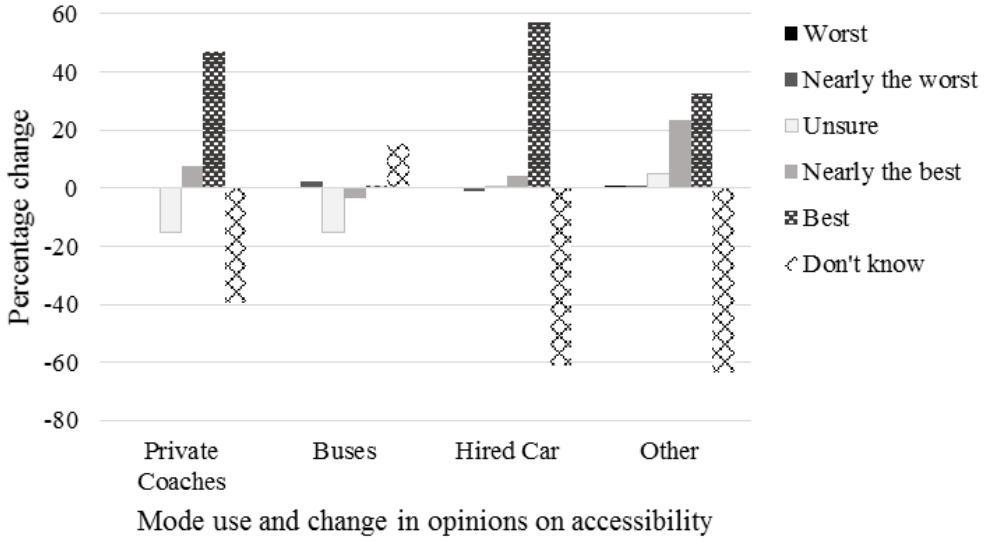


Figure 7.20 Percentage change between post-and pre-reform for mode use and accessibility – Tourists

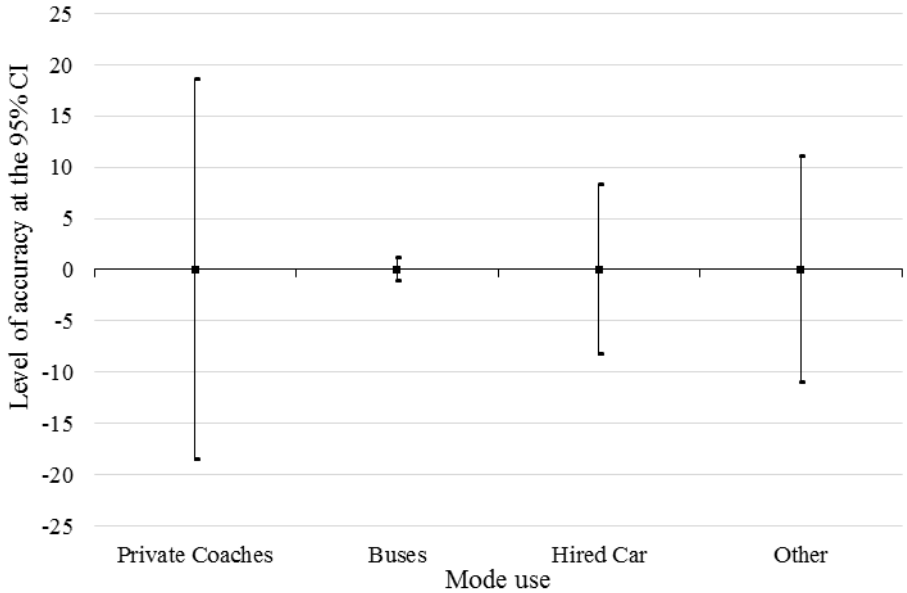


Figure 7.21 Accuracy level at the 95% CI for percentage change between mode use and accessibility - Tourists

Figure 7.22 shows the percentage changes in opinion for 'information'. As in the case for 'accessibility', bus users' opinion after the reform did not change drastically. There were slight increases in percentage changes for nearly the worst (2%), best (3%), and don't know (3%). For bus users, 'unsure' decreased by 7%. Figure I.7 (Appendix I) shows that both before and after the reform, bus users considered information as nearly the best (pre: 42%, post: 43%) and the best (pre: 16%, post: 19%). Figure 7.23 indicates that the percentage changes for bus users were accurate at the 95% confidence level.

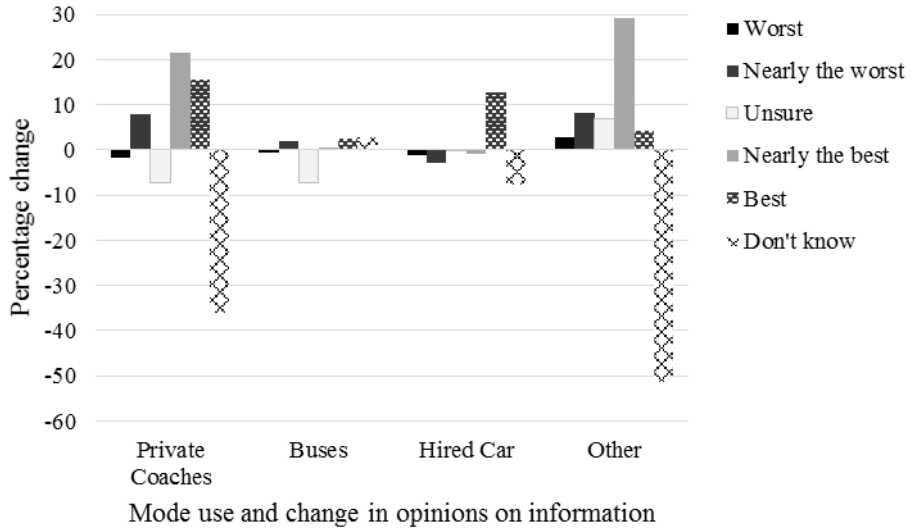


Figure 7.22 Percentage change between post-and pre-reform for mode use and information – Tourists

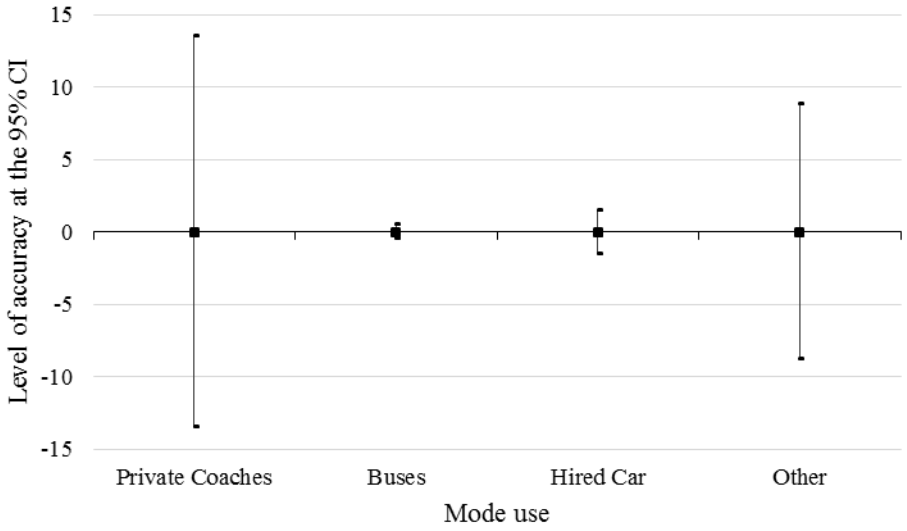


Figure 7.23 Accuracy level at the 95% CI for percentage change between mode use and information - Tourists

Regarding ‘time’, bus users increased their negative opinion (Figure 7.24) with a percentage change increase of 14%. Moreover, the opinion ‘nearly the best’ decreased by 10%, and ‘unsure’ decreased by 8%. Figure 7.25 shows that the bus users’ percentage changes were statistically significant at the 95% confidence level.

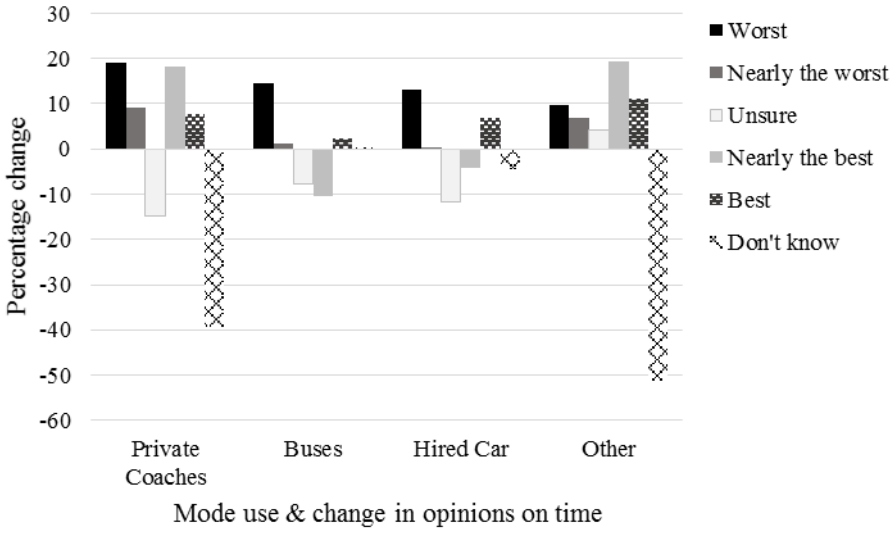


Figure 7.24 Percentage change between post-and pre-reform for mode use and time – Tourists

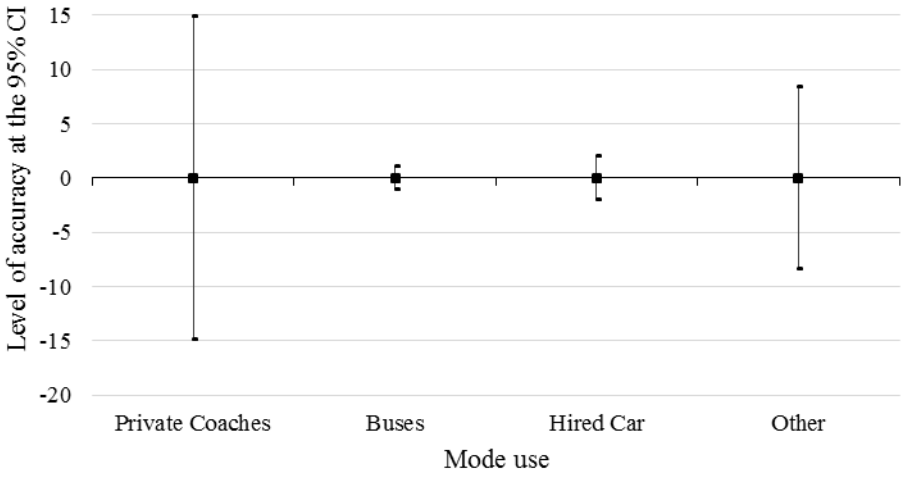


Figure 7.25 Accuracy level at the 95% CI for percentage change between mode use and time – Tourists

Customer care was considered by bus users as slightly improved (Figure 7.26). In fact, percentage changes of positive opinions increased slightly (+4% nearly the best, and +4% the best), and negative opinions (-3% the worst, and -2% nearly the worst) and

'unsure' (-4%) decreased slightly. The bus users' opinions were statistically significant at the 95% confidence level (Figure 7.27).

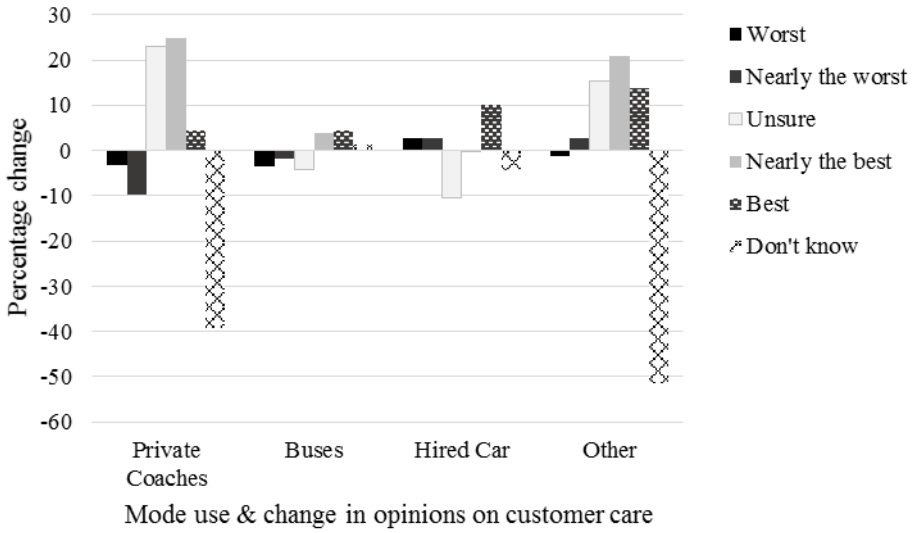


Figure 7.26 Percentage change between post-and pre-reform for mode use and customer care – Tourists

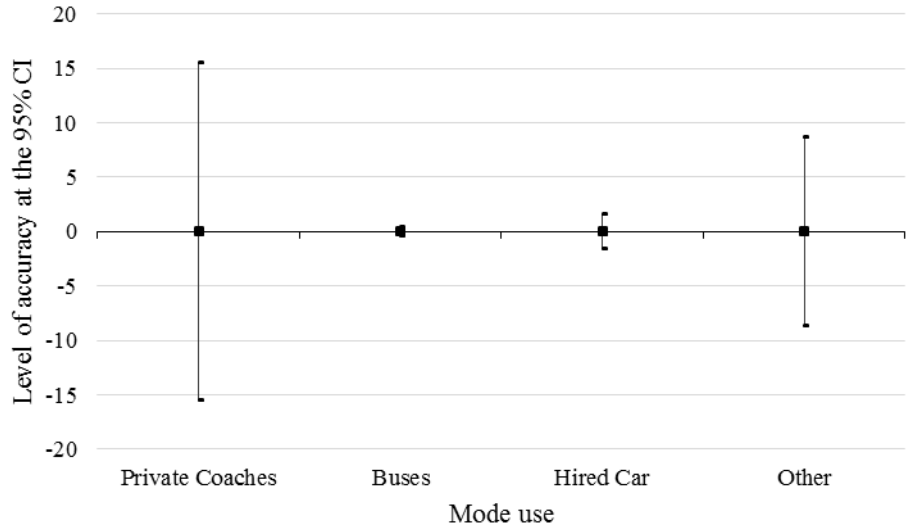


Figure 7.27 Accuracy level at the 95% CI for percentage change between mode use and customer care – Tourists

Regarding ‘fare’ after the reform, the percentage changes for the bus users’ opinions were slight (Figure 7.28). The opinions ‘nearly the best’ decreased by 6%, and ‘the best’ increased by 2%. Interestingly, the positive opinions of private coach users (+61% - the best) and hired car users (+12%) increased. The percentage change in opinions was statistically significant at the 95% confidence level for bus users and hired car users (Figure 7.29). For the private coach users, however, the result needs to be interpreted with caution, as the accuracy levels have a wide range around the mean (Figure 7.29).

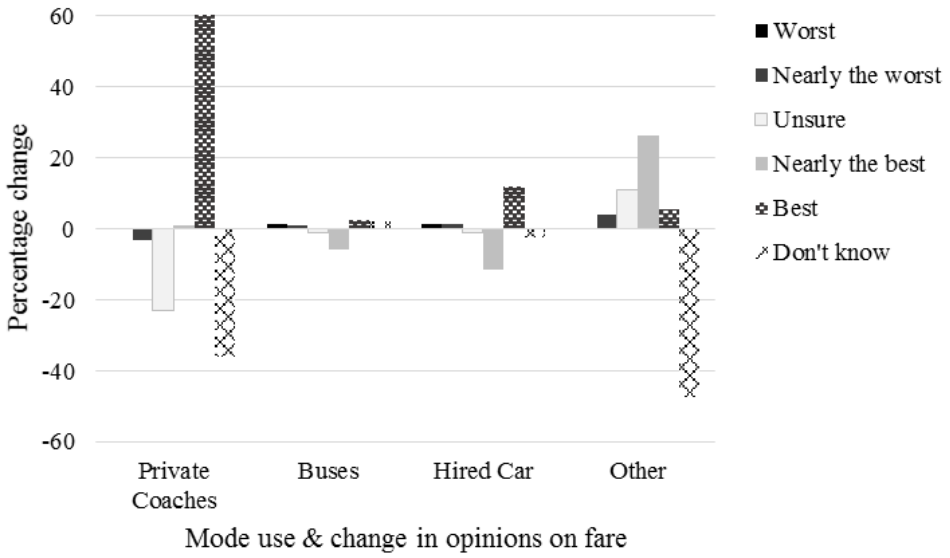


Figure 7.28 Percentage change between post-and pre-reform for mode use and fare – Tourist

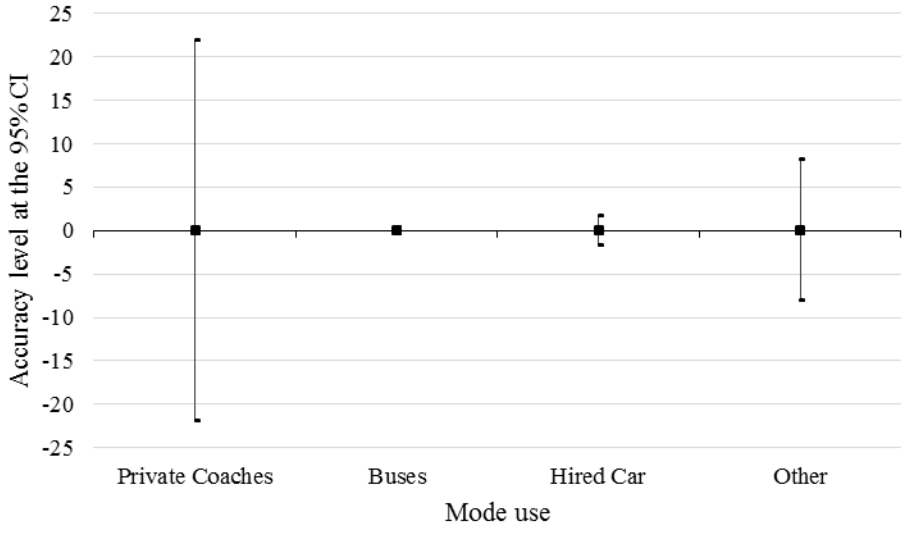


Figure 7.29 Accuracy level at the 95% CI for percentage change between mode use and fare – Tourists

For bus users, comfort improved after the reform (+19%) (Figure 7.30). The opinion nearly the worst decreased by 14% (Figure 7.30). Positive opinion by bus users probably increased because of the ambient conditions on board the buses, as the reform introduced buses with air conditioning. Figure 7.31 shows that bus users' opinions were statistically significant at the 95% confidence level.

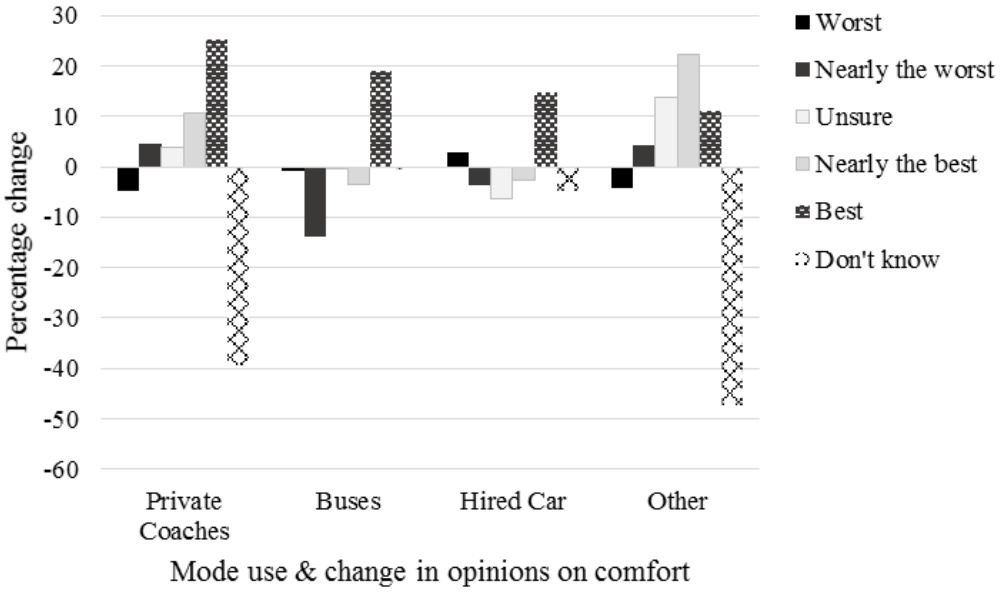


Figure 7.30 Percentage change between post-and pre-reform for mode use and comfort – Tourist

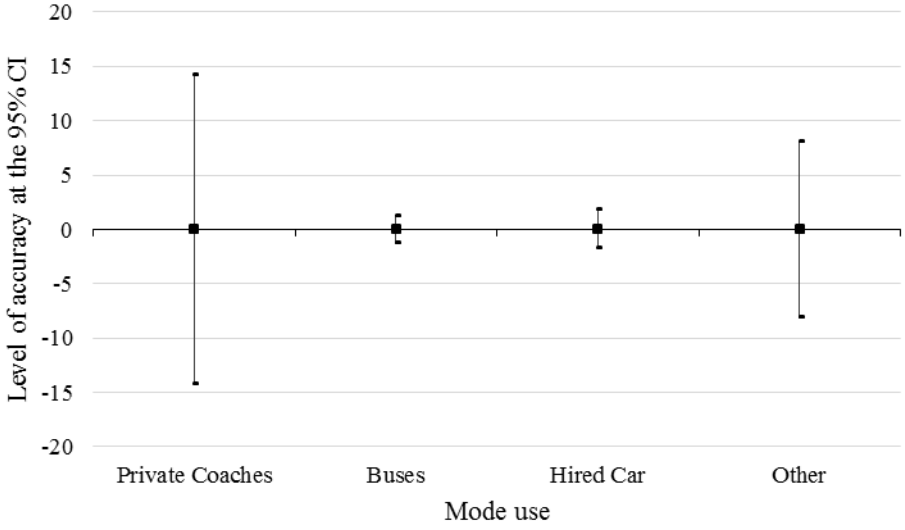


Figure 7.31 Accuracy level at the 95% CI for percentage change between mode use and comfort – Tourists

The tourist bus users' opinions about security varied. There was an increase in percentage change for the opinion 'the best' (13%) (Figure 7.32). The opinion 'the worst' increased by 3%, while the opinions 'nearly the worst' (-3%), 'unsure' (-10%), and 'nearly the best' (-5%) decreased (Figure 7.32). Figure 7.33 shows that for bus users, the confidence levels were statistically significant at the 95% confidence interval.

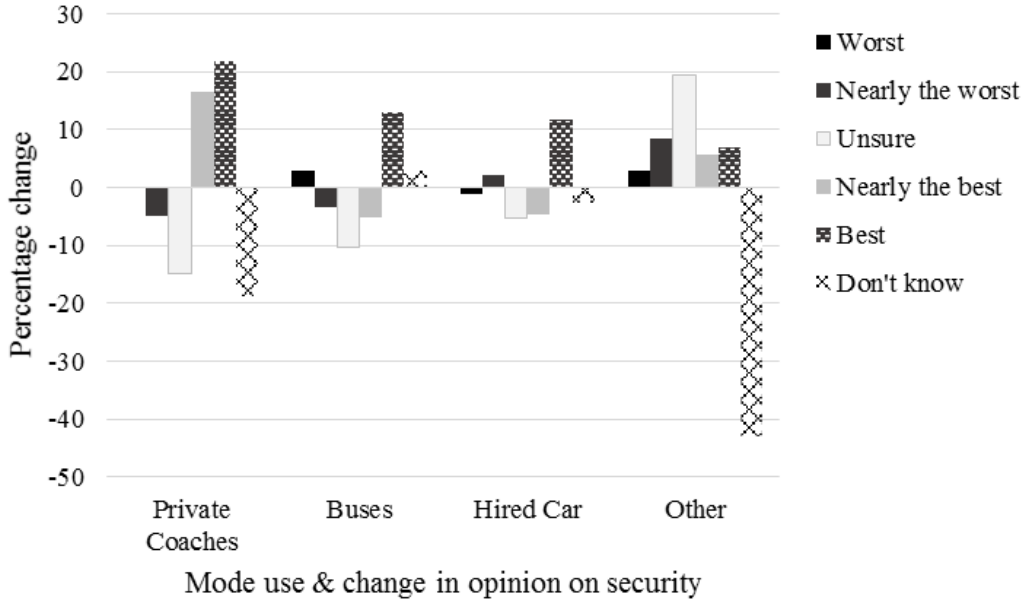


Figure 7.32 Percentage change between post-and pre-reform for mode use and security – Tourist

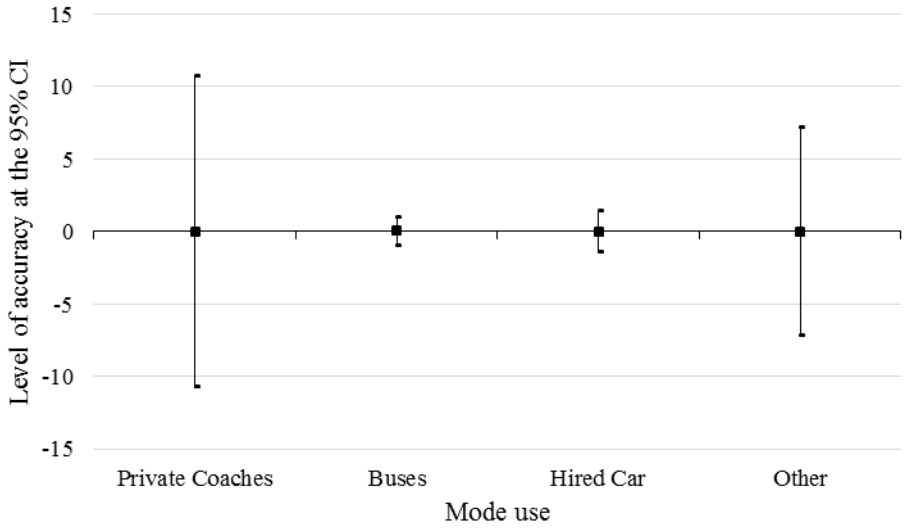


Figure 7.33 Accuracy level at the 95% CI for percentage change between mode use and security – Tourists

The change in opinions of bus users regarding the impact on the environment improved after the reform. The opinions 'nearly the worst' (-24%) and 'the worst' (-15%) decreased (Figure 7.34). The opinions 'the best' increased by 9% and 'nearly the best' increased by 12%. There was, however, an increase in 'don't know' (18%).

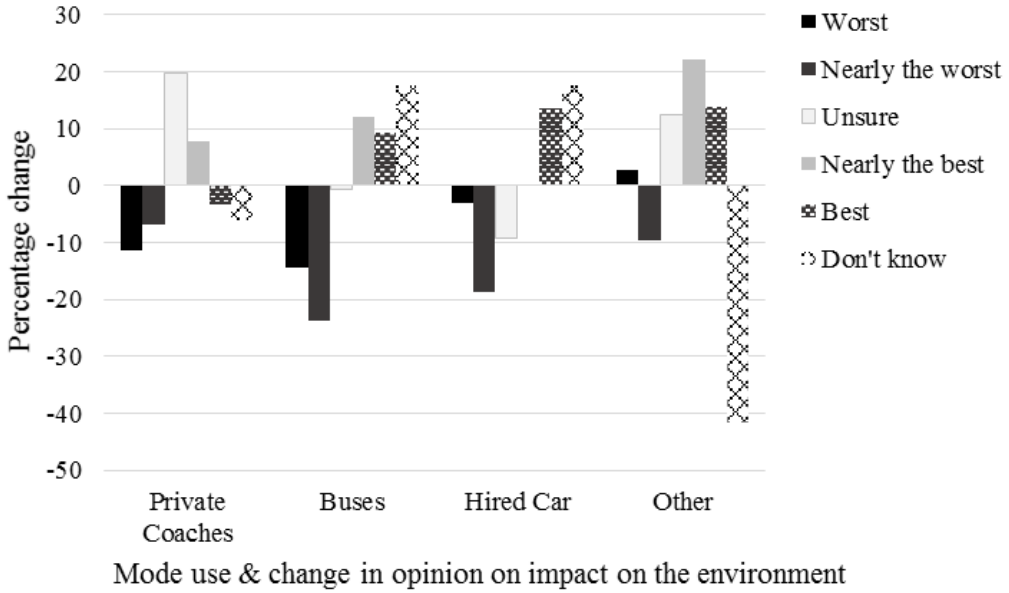


Figure 7.34 Percentage change between post-and pre-reform for mode use and impact on the environment – Tourist

Figure 7.35 shows that there was a slight increase in the range above and below the mean for bus users when compared to the other factors. The changes in opinion are statistically significant at the 95% confidence level. After the reform, visual and air pollution from the buses decreased because the fleet had to be compliant with EU standards on emissions. Hence, buses had to be at least Euro V compliant.

For tourist bus users, the major improvements after the reform were in comfort, security, and impact on the environment. Customer care improved slightly, and there was no significant change regarding accessibility and information. The issues with time seemed to influence the bus users negatively, as the percentage change was negative in this case.

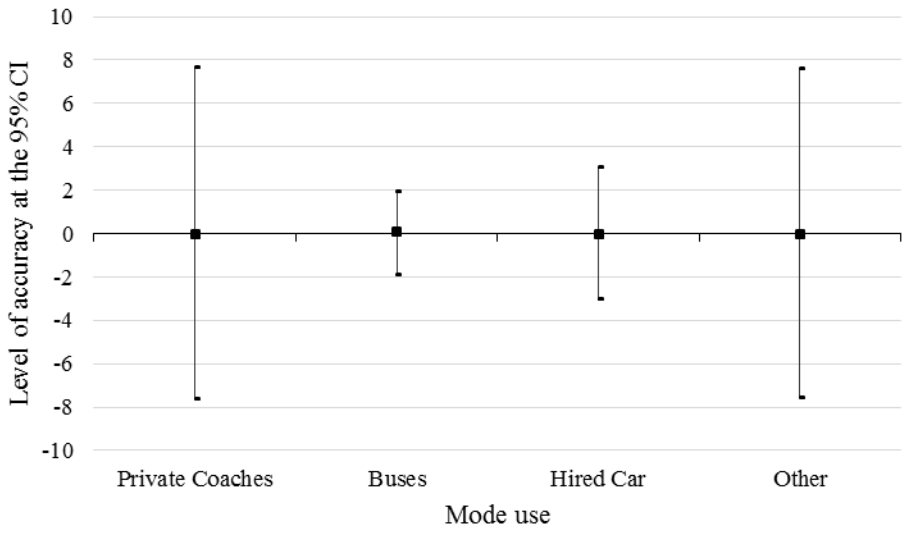


Figure 7.35 Accuracy level at the 95% CI for percentage change between mode use and impact on the environment – Tourists

### 7.2.2 Impacts of demographic characteristics on attitudes and perceived confidence

Attitudes and perceived confidence are constructed by latent variables that are influenced by gender, age, and service quality (Figure 7.1). Pearson correlations were performed for the Maltese residents and tourists to identify the relationship between 'gender' and opinions about 'service quality', and between 'age' and opinions about 'service quality'. The opinions are considered as nominal categories (Table 7.12).

Table 7.20 illustrates the results of the Pearson correlations (*r*) between the Maltese residents' and tourists' gender and their opinions about the bus service quality, before and after the reform. None of the relationships had a statistically significant correlation. Hence, in this case, gender does not influence attitudes and perceived confidence towards the bus service and bus use.

Table 7.20 Pearson correlations for Gender with Service Quality

| | | Maltese residents | | Tourists | |
|---|---|---|---|---|---|
| | Reform | Pre | Post | Pre | Post |
| Service Quality Characteristics | Accessibility | 0.025 | -0.009 | 0.034 | -0.009 |
| | Information | -0.022 | - .032 | 0.050 | -0.032 |
| | Time | -0.013 | -0.092 | 0.014 | -0.092 |
| | Customer Care | -0.017 | -0.021 | 0.039 | -0.021 |
| | Fare | 0.072 | -0.012 | 0.010 | -0.012 |
| | Comfort | 0.025 | -0.042 | -0.003 | -0.042 |
| | Security | 0.087 | -0.077 | 0.070 | -0.077 |
| | Impact on the Environment | 0.046 | -0.043 | 0.020 | -0.043 |

Table 7.21 shows the results of the Pearson correlations (*r*) used to identify the relations between the Maltese residents' and tourists' age and their opinions about the bus service quality before and after the reform. The results in bold are statistically significant; the level of significance is indicated at the bottom of Table 7.21. The statistically significant results indicate a positive relationship between the participants' age and their opinions about the bus service quality.

Table 7.21 Pearson correlations for Age with Service Quality

| | | Maltese residents | | Tourists | |
|---|---|---|---|---|---|
| | Reform | Pre | Post | Pre | Post |
| Service Quality Characteristics | Accessibility | 0.077 | 0.055 | **0.116*** | 0.055 |
| | Information | 0.054 | 0.041 | **0.102*** | 0.041 |
| | Time | -0.020 | **0.166*** | **0.131**** | **0.116*** |
| | Customer Care | 0.033 | **0.130*** | **0.124*** | **0.130*** |
| | Fare | -0.053 | 0.055 | **0.162**** | 0.055 |
| | Comfort | 0.064 | **0.109*** | **0.180**** | **0.109*** |
| | Security | 0.050 | -0.018 | **0.121*** | -0.018 |
| | Impact on the Environment | 0.098 | 0.046 | 0.074 | 0.046 |

**Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

The analysis proceeds with $X^2$ tests for the variables that had a statistically significant relationship. In cases when the variables were statistically significant both pre- and post-reform, the percentage change in opinion is identified.

*Age – Maltese residents post-reform*

Pearson Chi-Square tests ($X^2$) (Pearson 1900) were performed to identify the relationship between age and time, customer care, and comfort. The $X^2$ tests were analysed with the 95% confidence level. Table 7.22 reveals that none of the tests was statistically significant at the 95% confidence level, and so no further analysis was performed.

Table 7.22 Pearson Chi-square tests with Age and Bus Service Quality Characteristics – Maltese residents, post-reform

| Reform Service Quality Characteristic | Post | | |
|---|---|---|---|
| | Time | Customer Care | Comfort |
| $X^2$ | 18.7 | 29.3 | 21.1 |
| p-value | 0.809 | 0.254 | 0.689 |

*Age – Tourists*

Pearson Chi-Square tests ($X^2$) (Pearson 1900) were performed to identify the relationship between the outcomes that were statistically significant in the Pearson correlations for tourists, pre- and post-reform, and age (Table 7.23). In each case, impact on the environment did not correlate with age; consequently, it was not included in the $X^2$ tests.

Table 7.23 shows the outcomes of the $X^2$ tests for tourists pre- and post-reform for age and the bus service quality characteristics. The $X^2$ tests were analysed with a 95% confidence level. The variables 'accessibility', 'information', 'fare', and 'security' were influenced by age, but only before the reform (Table 7.23). The $X^2$ values vary from medium to strong, indicating that the opinions about them might be influenced by age. This finding suggests that age might influence the opinion about each variable.

Table 7.23 Pearson Chi-square tests with Age and Bus Service Quality Characteristics – Tourists, pre-and post-reform

| | Reform | Pre | | Post | |
|---|---|---|---|---|---|
| | Pearson Chi-Sq. Test Values | $X^2$ | p-value | $X^2$ | p-value |
| Service Quality Characteristics | Accessibility | 50.0 | **0.003*** | - | - |
| | Information | 66.7 | **0.0001*** | - | - |
| | Time | 69.6 | **0.0001*** | 60.3 | **0.0001*** |
| | Customer Care | 60.0 | **0.0001*** | 59.2 | **0.0001*** |
| | Fare | 57.7 | **0.0001*** | - | - |
| | Comfort | 94.5 | **0.0001*** | 70.9 | **0.0001*** |
| | Security | 62.4 | **0.0001*** | - | - |

*Statistically significant at the 0.05 level (2-tailed)

Figure 7.36 shows a column graph of the cross-tabulations between age and opinion about accessibility (Appendix I, Table I.14), before the reform. The age groups that selected 'don't know' the most were between 21 and 50 years. These groups form part of the population that might use private coaches or hired cars, hence their lack of knowledge on accessibility. Generally, before the reform, opinion about accessibility was positive (Figure 7.36).

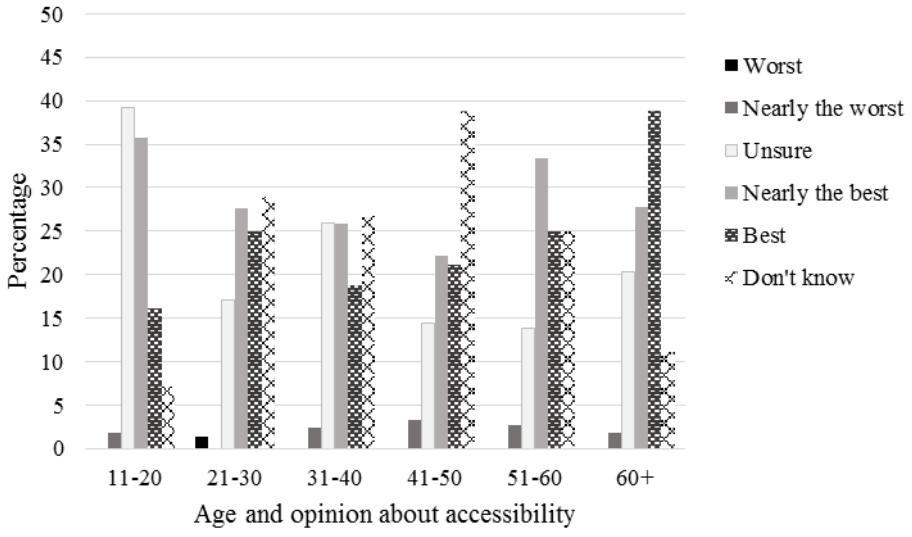


Figure 7.36 Age groups and opinion about accessibility – Tourists, Pre-Reform

Regarding 'information', before the reform, the age groups that most selected 'don't know' were those between 21 to 50 (Figure 7.37, Appendix I Table I.15). In general,

there were positive opinions about information before the reform. Interestingly, the younger age groups 11-20 (43%) and 21-30 (32%) had the highest percentages who selected ‘unsure’. Possibly, this could be related to mixed experiences while using the bus.

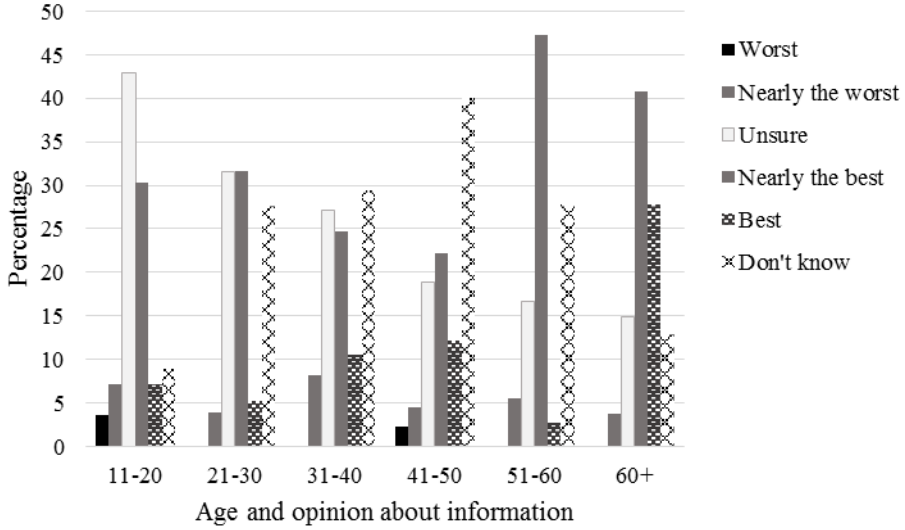


Figure 7.37 Age groups and opinion about information – Tourists, Pre-Reform

‘Fare’ was rated very positively before the reform (Figure 7.38, Appendix I Table I.16). Nearly all age groups had high percentages for the opinions ‘nearly the best’ and ‘the best’. Only the 41-50 age group selected ‘don’t know’ the most (40%).

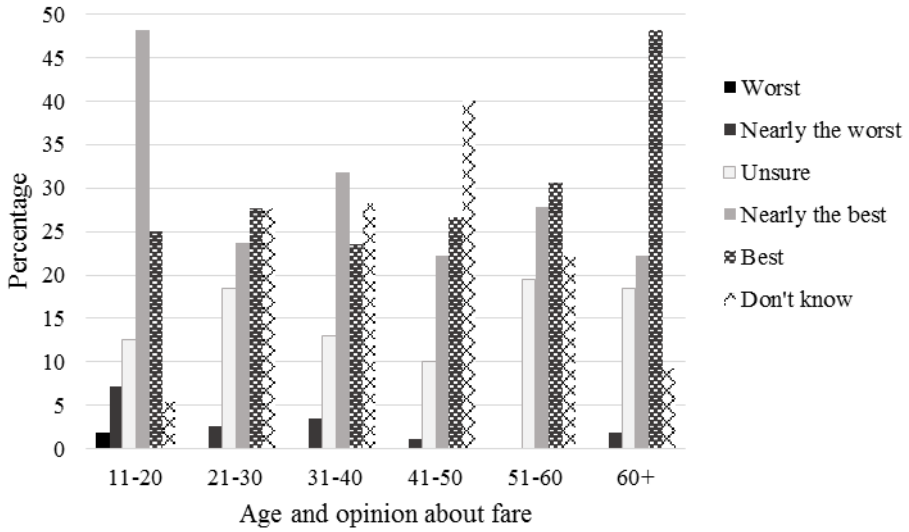


Figure 7.38 Age groups and opinion about fare – Tourists, Pre-Reform

Before the reform, tourists' opinion about security was mainly that it was nearly the best (Figure 7.39, Appendix I Table I.17). Twenty-four percent of the 60+ age group said that it was the best, and 20% of the 11-20 age group said that it was nearly the worst. The 'don't know' and 'unsure' options were selected quite often by all age groups, the latter indicating a potential issue about security. This opinion probably resulted from the bus drivers' behaviour. Bus drivers at times were aggressive towards their customers.

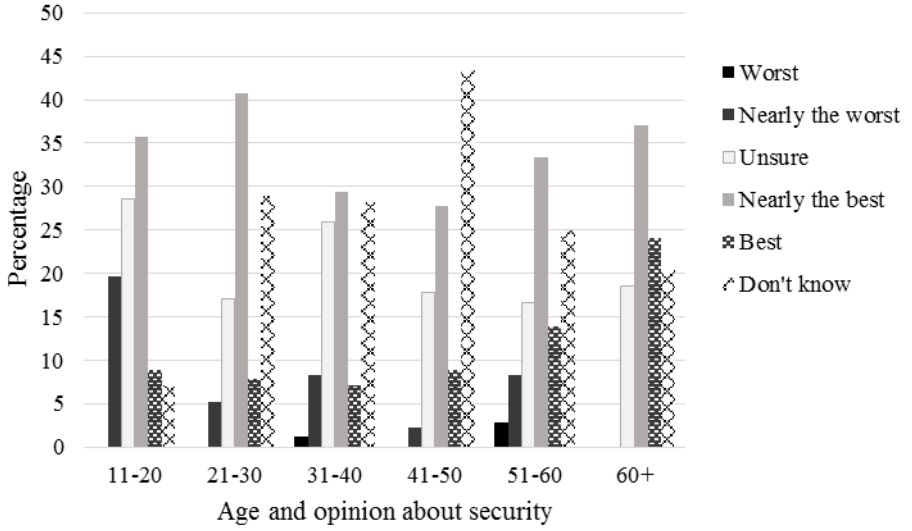


Figure 7.39 Age groups and opinion about security – Tourists, Pre-Reform

'Time', 'customer care', and 'comfort' were influenced by age before and after the reform (Table 7.22). The $X^2$ values are relatively strong, indicating that the opinions about them were influenced by age. Appendix I (Figures I.14 to I.16) shows the percentages for the opinions about each variable by age group before and after the reform.

The age groups 11-20 (+20%), 21-30 (+20%), 51-60 (+18%), and 60+ (e.g., +19%) considered time as the worst and nearly the worst (Figure 7.40). There was an increase among the 11-20 age group that it is 'nearly the best' (+18%), and the 51-60 age group increased their opinion that it is 'the best' (+15%).

These findings indicate that after the reform, the service quality of time decreased. For some age groups, however, this improved. The reason for this pattern might be the

location of the origins and destinations of these age groups. Time issues might have been a persistent problem in certain areas, but not in others.

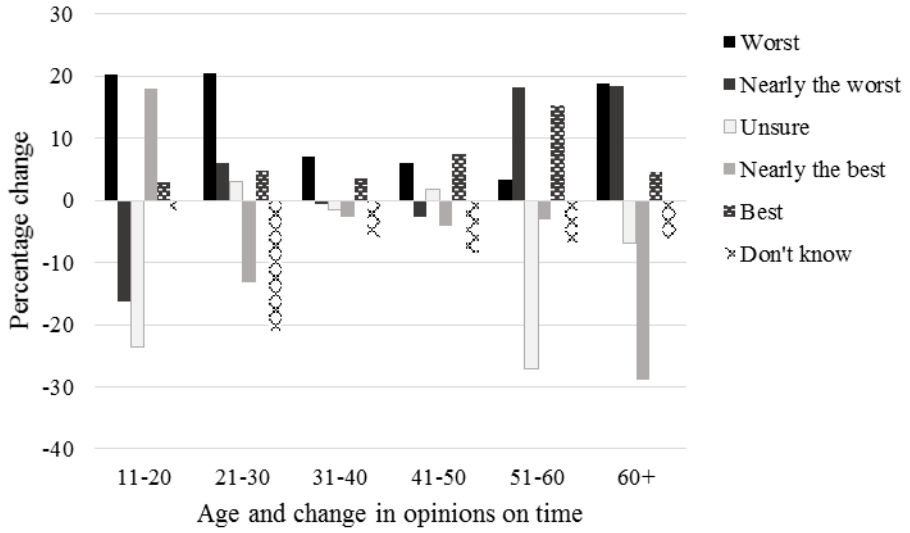


Figure 7.40 Percentage change between post-and pre-reform for age and time – Tourist

Figure 7.41 shows the level of accuracy of the tourists' change of opinion. The most accurate readings are for the 31-40 and the 41-50 age groups.

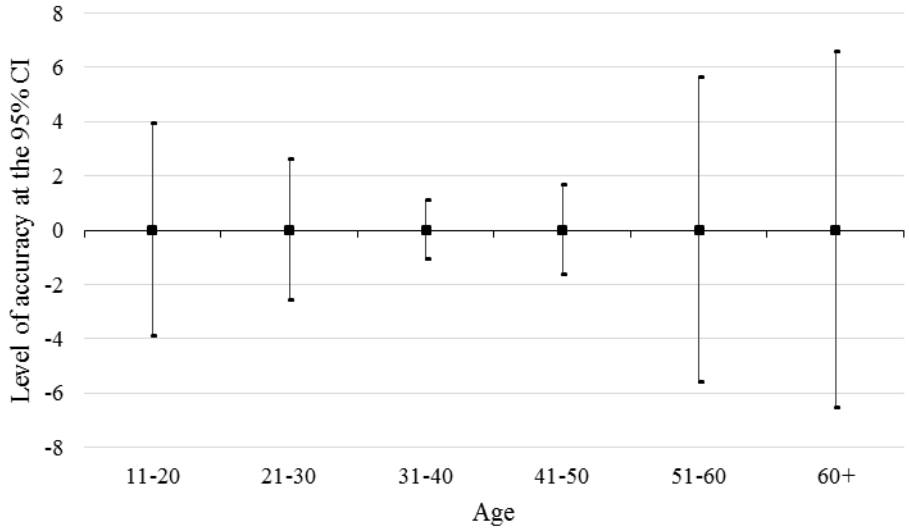


Figure 7.41 Accuracy level at the 95% CI for percentage change between age and time – Tourists

Regarding customer care, there was an overall improvement in opinion for nearly all age groups (Figure 7.42). The negative opinions derived mostly from the 60+ age groups, with an increase of 14% who said 'nearly the worst' and 3% who said 'the worst'. Figure 7.43 shows that the level of accuracy of the 60+ age group, when compared to the 31-40 age group, is relatively low at the 95% confidence level. The upper bound and lower bound levels are still low at +3.3 and -3.3.

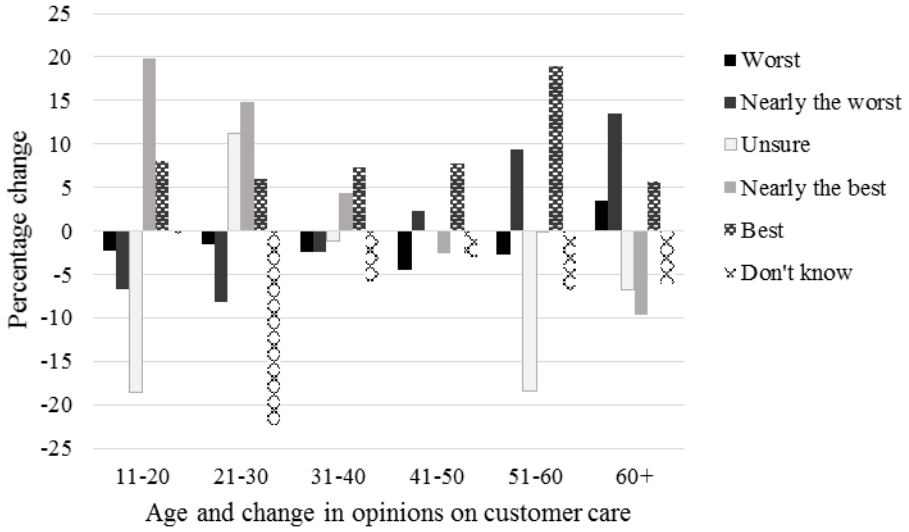


Figure 7.42 Percentage change between post-and pre-reform for age and customer care – Tourist

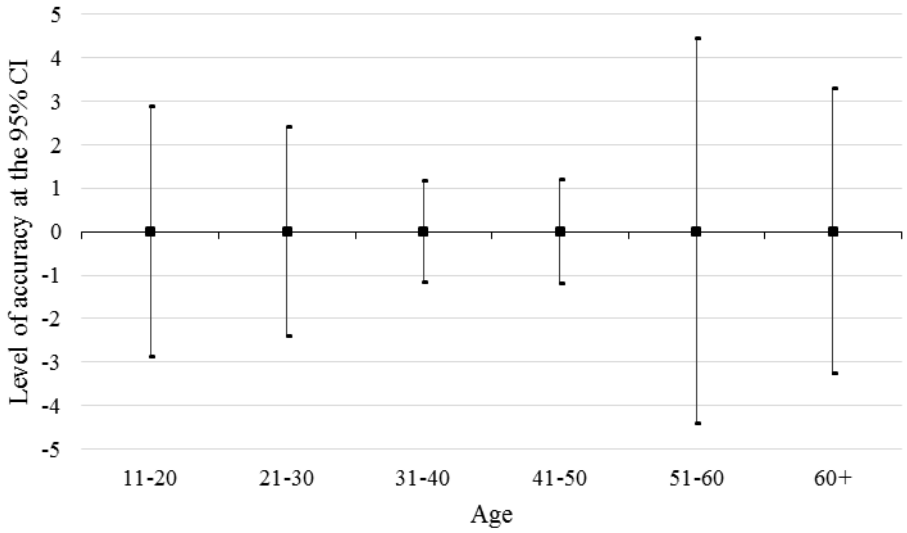


Figure 7.43 Accuracy level at the 95% CI for percentage change between age and customer care – Tourists

Tourists' opinion about comfort was positive after the reform (Figure 7.44). The opinion 'the best' increased for all age groups. Figure 7.45 shows that accuracy was relatively high at the 95% confidence level.

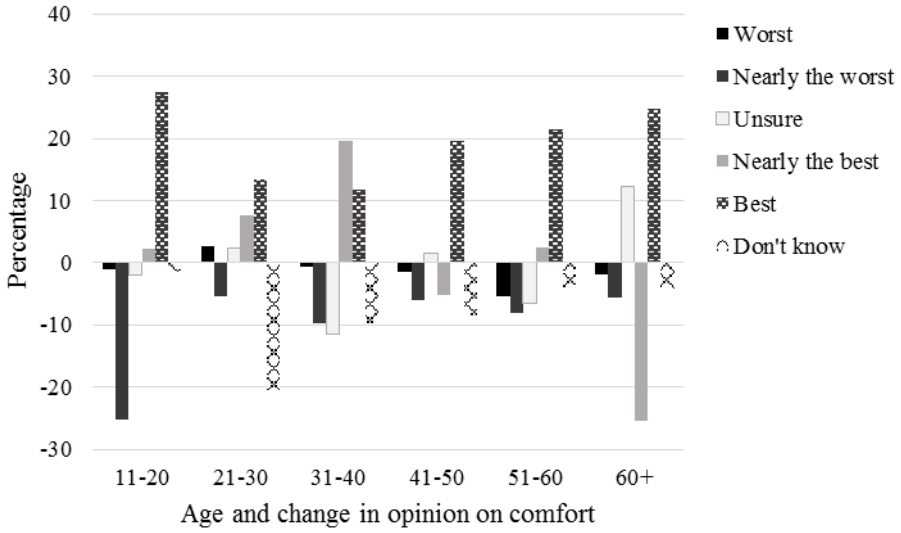


Figure 7.44 Percentage change between post-and pre-reform for age and comfort – Tourist

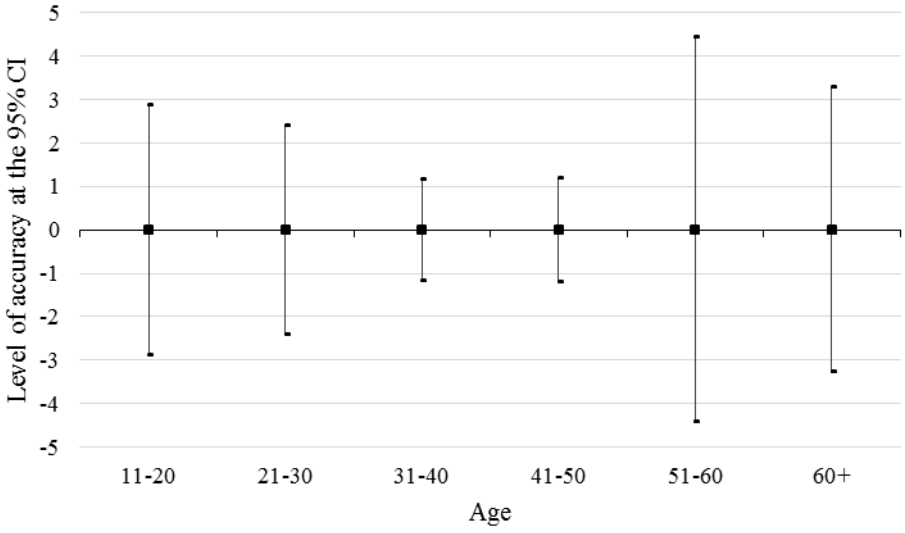


Figure 7.45 Accuracy level at the 95% CI for percentage change between age and comfort – Tourists

### 7.2.3 Measuring attitudes

The following sets of analyses do not include the 'don't know' option, because attitudes are measured directly. Consequently, the numbers given to each service quality characteristic are considered as ratings, and hence are ordinal. These ratings are analysed using Factor Analysis to reveal their underlying structure. This is necessary to identify the latent (underlying unobservable) variables derived from the observed variables (known as the manifest variables, in this case, the ratings), to portray the participants' attitudes (UCLA: Statistical Consulting Group 2016).

*Pre-Reform – Maltese residents*

The correlation matrix in Table 7.24 shows that there are sufficient correlations (highlighted) between the variables (greater than .30). The correlations justify the application of the Factor Analysis (Hair et al. 2014).

Table 7.24 Correlations between variables – Maltese Residents Pre-Reform

| | Accessibility | Information | Time | Customer care | Fare | Comfort | Security | Impact on the Environment |
|---|---|---|---|---|---|---|---|---|
| Accessibility | - | | | | | | | |
| Information | .653 | - | | | | | | |
| Time | .387 | .562 | - | | | | | |
| Customer care | .443 | .591 | .624 | - | - | | | |
| Fare | .379 | .323 | .183 | .282 | | | | |
| Comfort | .277 | .347 | .561 | .564 | .047 | - | | |
| Security | .292 | .234 | .340 | .310 | .311 | .408 | - | |
| Impact on the Environment | .398 | .431 | .305 | .501 | .216 | .494 | .270 | - |

All correlations were statistically significant at the 95% confidence level

The Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity (Table 7.25) ensure that the data are statistically adequate to be analysed with Factor Analysis (Field 2009). The result is statistically significant (0.0001) at the 95% confidence interval (Table 7.25). The KMO measure of sampling adequacy (Table 7.25) is an index ranging between 0 to 1, where 1 means that each variable is perfectly predicted without error by the other variables. With an index of .802, the data are interpreted as 'meritorious' (Appendix H, Table H.1)

Using the Maximum Likelihood extraction method to estimate factor loadings for the observed correlation matrix (Tabachnick & Fidell 2014), Table 7.26 shows that there

are two factors that have eigenvalues equal to or more than one (Factor 1: 3.767, and Factor 2: 1.117); this is also evident in the scree plot (Figure 7.46) (Tabachnick & Fidell 2014). These factors explain 47% and 14% of the variance, respectively (Table 7.26), and show the extent to which the factors represent the spread around the mean (Berman Brown & Saunders 2008) of the correlations in this case.

Table 7.25 The KMO and Bartlett's Test – Maltese Residents Pre-Reform Dataset

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .802 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 851.746 |
| | df | 28 |
| | Sig. | 0.0001 |

Table 7.26 Total Variance Explained – Maltese Residents, Pre-reform

| | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings |
|---|---|---|---|---|---|---|---|
| Factor | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 3.767 | 47.083 | 47.083 | 2.902 | 36.273 | 36.273 | 2.852 |
| 2 | 1.117 | 13.961 | 61.044 | 1.187 | 14.840 | 51.113 | 2.469 |
| 3 | .900 | 11.255 | 72.299 | | | | |
| 4 | .717 | 8.961 | 81.261 | | | | |
| 5 | .565 | 7.061 | 88.321 | | | | |
| 6 | .350 | 4.379 | 92.701 | | | | |
| 7 | .319 | 3.984 | 96.685 | | | | |
| 8 | .265 | 3.315 | 100.000 | | | | |

The pattern matrix (Table 7.27) is used to interpret the factor that is produced because the difference between high and low loadings is more apparent (Tabachnick & Fidell 2007). As a rule of thumb, only the variables with loadings of .32 and above are interpreted: the greater the loading, the more the variable is a pure measure of the factor. The guidelines to interpret the factor loadings are available in Appendix H, Table H.2 (Tabachnick & Fidell 2007).

The first factor in the pattern matrix has one factor loading that is excellent (above .71), specifically, 'comfort' (1.063) (Table 7.27). Given that this is the only highest factor

loading within the first factor, a suitable name that describes this latent variable for both the bus users' and non-bus users' ratings before the bus reform is '**luxury**'. Luxury is defined as a commodity that users and non-users search for in a vehicle, for instance, air-conditioning, personal space, ergonomics, and ride quality.

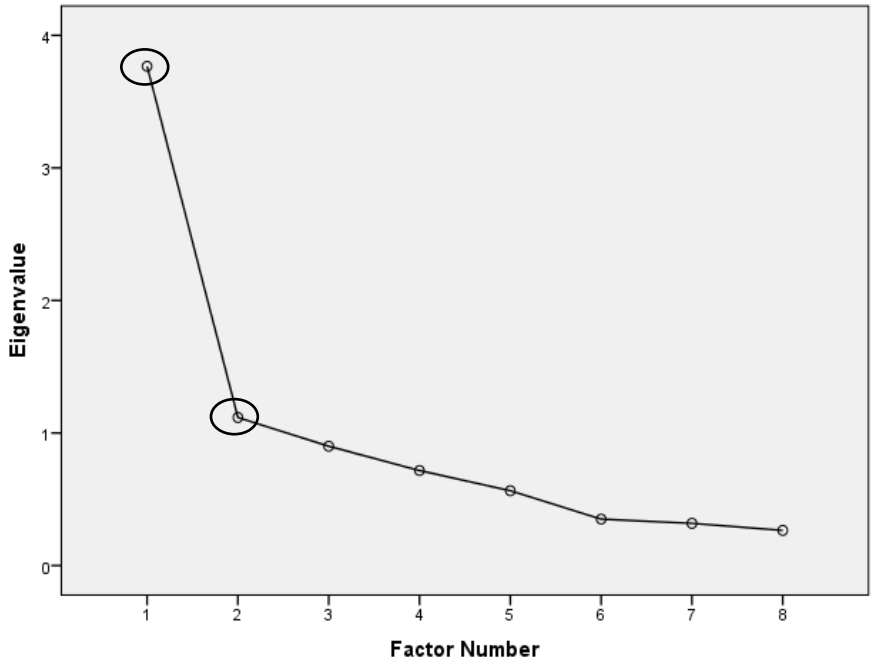


Figure 7.46 Scree plot illustrating the eigenvalues that are >1 – Maltese Residents, Pre-reform

Table 7.27 Pattern matrix showing the factors to interpret – Maltese Residents Pre-Reform

| | Factor | |
|---|---|---|
| | 1 | 2 |
| Accessibility | .118 | .672 |
| Information | .175 | .764 |
| Time | .529 | .291 |
| Customer Experience | .517 | .369 |
| Fare | -.065 | .482 |
| Comfort | 1.063 | -.274 |
| Security | .414 | .078 |
| Impact on the Environment | .469 | .213 |

The second factor had a factor loading that was 0.672 (accessibility), which is very good (Appendix H, Table H.2), and another factor loading that is 0.764 (information),

which is excellent (Appendix H, Table H.2). A possible description for this latent variable, which combines 'accessibility' and 'information', is the '**availability**' of the service in that it provides opportunities to reach destinations, existing both as a network and with information for the people to use it.

The reliability test Cronbach's alpha was then applied to the pre-defined variables to measure people's attitudes towards the bus service quality. Cronbach's alpha is used to check that the scale consistently reflects the construct that it is measuring (Field 2009). Generally, the agreed reliability coefficient is at least .70, which may decrease to .60 in exploratory research. The constraint with this measure is the degree of intercorrelation with the number of variables used (Hair et al. 2014). In this case, the Cronbach's alpha is 0.834, indicating a high reliability for the results.

Next, the Kruskal-Wallis tests were conducted, including the latent variable 'luxury' with the grouping variables 'gender', 'age', and 'mode use', separately. These tests were performed to identify the relationship between the grouping variables and luxury (Laerd Statistics Lund Research Ltd 2013). A hypothesis was developed for each grouping variable (Table 7.28). The medians are reported for each condition because they are appropriate for non-parametric tests (Field 2009). This test was selected because it satisfies two assumptions:

- Assumption 1: the dependent variable is ordinal or continuous; in this case, 'luxury' is continuous.
- Assumption 2: the independent variable consists of two or more categorical independent groups; gender has two categories, age has six categories, and mode use has three categories.

Table 7.28 Hypothesis for Kruskal-Wallis Tests with 'luxury', Maltese residents, Pre-reform

| Grouping Variable | Hypothesis | |
|---|---|---|
| Gender | Null | The grouping variable gender is not influenced by the luxury in a vehicle |
| | Alternative | The grouping variable gender is influenced by the luxury in a vehicle |
| Age | Null | The grouping variable age is not influenced by the luxury in a vehicle |
| | Alternative | The grouping variable age is influenced by the luxury in a vehicle |
| Mode use | Null | The grouping variable mode use is not influenced by the luxury in a vehicle |
| | Alternative | The grouping variable mode use is influenced by the luxury in a vehicle |

None of these tests indicated a genuine statistical significance between the variables (all factors were above the p-value of 0.05, Table 7.29). This implies that in each case, the null hypothesis is accepted (Table 7.28). This finding therefore demonstrates that Maltese residents' attitudes before the reform were not influenced by any of the grouping variables (gender, age, and mode use). Possibly, the latent variable 'luxury' is a consequence of Maltese culture.

Table 7.29 Kruskal-Wallis test results with the independent variable 'luxury'

| Dependent Variable | Independent Variable | Chi-Square | df | Asymp.Sig. |
|---|---|---|---|---|
| Gender | Luxury | 0.427 | 1 | 0.513 |
| Age | Luxury | 5.603 | 5 | 0.347 |
| Mode Use | Luxury | 1.471 | 2 | 0.479 |

Tested at the p-value of 0.05

The Kruskal-Wallis tests were also run with the latent variable 'availability', and 'gender', 'age', and 'mode use' were applied as the grouping variables, separately. These tests were performed to test the relationship between each grouping variable and 'availability'. The same assumptions were used, and the hypothesis for each grouping variable was as indicated in Table 7.30.

Table 7.30 Kruskal-Wallis test results with 'availability', Maltese residents, Pre-Reform

| Grouping Variable | Hypothesis | |
|---|---|---|
| Gender | Null | The grouping variable gender is not influenced by the availability of the bus |
| | Alternative | The grouping variable gender is influenced by the availability of the bus |
| Age | Null | The grouping variable age is not influenced by the availability of the bus |
| | Alternative | The grouping variable age is influenced by the availability of the bus |
| Mode use | Null | The grouping variable mode use is not influenced by the availability of the bus |
| | Alternative | The grouping variable mode use is influenced by the availability of the bus |

Gender and age were not statistically significant because they had p-values above 0.05 (Table 7.31). Hence, for these two grouping variables, the null hypothesis is accepted. Mode use has a relationship with 'availability' because the p-value is less than 0.05 (Table 7.31). Consequently, the null hypothesis – 'the grouping variable mode use is influenced by the availability of the bus' - is rejected.

Table 7.31 Kruskal-Wallis test results with the independent variable ‘availability’

| Dependent Variable | Independent Variable | Chi-Square | df | Asymp.Sig. |
|---|---|---|---|---|
| Gender | Availability | 0.111 | 1 | 0.739 |
| Age | Availability | 2.313 | 5 | 0.804 |
| Mode Use | Availability | 6.913 | 2 | 0.032 |

Tested at the p-value of 0.05

The medians (Table 7.32) indicate that ‘availability’ is significantly different between the three mode uses. The bus has the highest median score relative to car and other; hence, bus use is significantly influenced by the availability of the bus (Table 7.32). Availability influences the type of mode used. The Mann-Whitney U test is used as a post-hoc test to identify the difference in groups between bus use, car use, and other mode use. The tests were performed for bus use and car use, bus use and other, and car use and other. The Mann-Whitney U test for car use and other was not statistically significant at the p-value of 0.05 (U = 3372.5, p-value = 0.772).

Table 7.32 Median results from Kruskal-Wallis test for availability and mode use – Maltese residents, Pre-reform

| Mode Use | N | Median |
|---|---|---|
| Car | 136 | -.0614592 |
| Bus | 93 | .2417235 |
| Other | 51 | -.2052321 |
| Total | 280 | -.0480276 |

This post-hoc test shows that the mode use ‘bus’ significantly influences availability. Table 7.23 shows the outcomes are lower than the p-value of 0.05 (bus and car: U = 5152.0, p-value – 0.017; bus with other: U = 1875.0, p-vale = 0.038). Bus use has the highest mean ranks in relation to car use and other mode use (Table 7.34). Hence, bus use is influenced by the availability of the bus.

Table 7.33 Mann-Whitney U test results

| Test Statistics[a] | Availability | Test Statistics[b] | Availability |
|---|---|---|---|
| Mann-Whitney U | 5152.000 | Mann-Whitney U | 1875.000 |
| Wilcoxon W | 14468.000 | Wilcoxon W | 3201.000 |
| Z | -2.380 | Z | -2.074 |
| Asymp. Sig. (2-tailed) | .017 | Asymp. Sig. (2-tailed) | .038 |
| a. Grouping Variable: Mode Use - Car & Bus | | b. Grouping Variable: Mode Use - Bus & Other | |

Table 7.34 Mean ranks from Mann-Whitney U tests

| Latent variable | Mode use | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| Availability | Car | 136 | 106.38 | 14468.00 |
| | Bus | 93 | 127.60 | 11867.00 |
| | Total | 229 | | |
| | Bus | 93 | 77.84 | 7239.00 |
| | Other | 51 | 62.76 | 3201.00 |
| | Total | 144 | | |

*Pre-Reform – Tourists*

The correlation matrix shows that most of the correlations were greater than .30, indicating that there are sufficient correlations (highlighted) between the variables (Table 7.35). These correlations justify the application of the Factor Analysis (Hair et al. 2014).

Table 7.35 Correlations between variables – Tourists, pre-reform

| | Accessibility | Information | Time | Customer care | Fare | Comfort | Security | Impact on the environment |
|---|---|---|---|---|---|---|---|---|
| Accessibility | - | | | | | | | |
| Information | .424 | - | | | | | | |
| Time | .400 | .468 | - | | | | | |
| Customer care | .334 | .499 | .583 | - | | | | |
| Fare | .224 | .330 | .261 | .359 | - | | | |
| Comfort | .429 | .410 | .554 | .495 | .232 | - | | |
| Security | .312 | .426 | .393 | .292 | .280 | .537 | - | |
| Impact on the environment | .253 | .424 | .353 | .489 | .131 | .501 | .325 | - |

All correlations were statistically significant at the 95% confidence level

The Kaiser-Meyer-Olkin (KMO) and Bartlett's test indicates a sampling adequacy of 0.835, which is quite high (Table 7.36) (Hair et al. 2014). As indicated in Appendix H, Table H.1, the resultant index is interpreted as 'meritorious'.

The Maximum Likelihood Extraction method is used to estimate the factor loadings for the observed correlation matrix (Tabachnick & Fidell 2014). Only one factor had eigenvalues equal to or more than 1 (Factor 1: 3.740) (Table 7.37); this is also evident in the scree plot (Figure 7.47). The factor explains 47% of the variance (Table 7.37), indicating the extent to which the factor represents the spread around the mean of the correlations (Berman Brown & Saunders 2008).

Table 7.36 The KMO and Bartlett's Test – Tourists, Pre-reform

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .835 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 654.899 |
| | df | 28 |
| | Sig. | 0.0001 |

Table 7.37 Total Variance Explained – Tourists, Pre-reform

| | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|
| Factor | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 3.740 | 46.748 | 46.748 | 3.175 | 39.682 | 39.682 |
| 2 | .914 | 11.419 | 58.167 | | | |
| 3 | .792 | 9.903 | 68.069 | | | |
| 4 | .731 | 9.141 | 77.210 | | | |
| 5 | .619 | 7.735 | 84.945 | | | |
| 6 | .537 | 6.711 | 91.656 | | | |
| 7 | .340 | 4.251 | 95.907 | | | |
| 8 | .327 | 4.093 | 100.000 | | | |

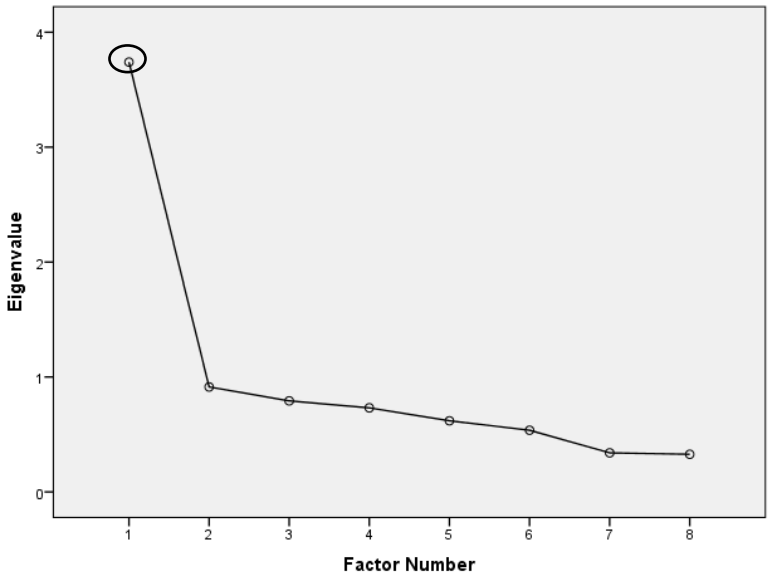


Figure 7.47 Scree plot illustrating the eigenvalue that is >1 – Tourists, Pre-reform

In this case, since only one factor was extracted, the factor matrix (Table 7.38) is used for interpretation. The greater the factor loadings, the more the latent variable is a pure measure of the factor (Tabachnick & Fidell 2007). Three variables are excellent (.71 and above) – 'comfort', 'time', 'customer experience'; one variable is very good (.63 and above) – 'information'; and two are good (.55 and above) – 'impact on the environment' and 'security' (Table 7.38, Appendix H, Table H.2).

Table 7.38 Factor matrix showing the factors to interpret – Tourists, Pre-reform

| | Factor 1 |
|---|---|
| Accessibility | .540 |
| Information | .667 |
| Time | .725 |
| Customer experience | .717 |
| Fare | .396 |
| Comfort | .744 |
| Security | .581 |
| Impact on the environment | .592 |

A suitable name that describes this latent variable is '**accommodating**'. Accommodating can be defined as a bus service that suits the tourists' needs. The type of tourists who would find this service accommodating would visit Malta mainly for a holiday; they would stay in the Northern and Northern Harbour District and so find the service suitable for their needs.

The reliability test Cronbach's alpha is then used to check the scale consistency to identify whether it reflects the construct that it is measuring (Field 2009). The Cronbach alpha in this case is 0.832, indicating high reliability for the results (Hair et al. 2014).

Next, Kruskal-Wallis tests were performed, including the latent variable 'accommodating' with the grouping variables gender, age, and mode use, separately. These tests were performed to identify the relationship between the grouping variables and the variable 'accommodating' (Laerd Statistics Lund Research Ltd 2013). A hypothesis was developed for each grouping variable (Table 7.39). The medians are reported for each condition because they are appropriate for non-parametric tests (Field 2009). This test was selected because it satisfies two assumptions:

- Assumption 1: the dependent variable is ordinal or continuous; in this case, 'accommodating' is continuous.
- Assumption 2: the independent variable consists of two or more categorical independent groups; gender has two categories, age has six categories, and mode use has four categories in the case of tourists.

Table 7.39 Hypothesis for Kruskal-Wallis Tests, Tourists with 'accommodating', Pre-reform

| Grouping Variable | Hypothesis | |
|---|---|---|
| Gender | Null | The grouping variable gender is not influenced by whether the bus service is accommodating |
| | Alternative | The grouping variable gender is influenced by whether the bus service is accommodating |
| Age | Null | The grouping variable age is not influenced by whether the bus service is accommodating |
| | Alternative | The grouping variable age is influenced by whether the bus service is accommodating |
| Mode use | Null | The grouping variable mode use is not influenced by whether the bus service is accommodating |
| | Alternative | The grouping variable mode use is influenced by whether the bus service is accommodating |

Only the grouping variable ‘age’ indicated a genuine statistical significance (the p-value was less than 0.05, Table 7.40). This implies that for the grouping variables ‘gender’ and ‘mode use’, the null hypothesis is accepted (Table 7.40). The null hypothesis for the grouping variable age - ‘the grouping variable age is influenced by whether the bus service is accommodating’ - is rejected.

Table 7.40 Kruskal-Wallis test results with the independent variable ‘accommodating’

| Dependent Variable | Independent Variable | Chi-Square | df | Asymp.Sig. |
|---|---|---|---|---|
| Gender | Accommodating | 3.253 | 1 | 0.071 |
| Age | Accommodating | 34.102 | 5 | 0.0001 |
| Mode Use | Accommodating | 1.51 | 3 | 0.680 |

Tested at the p-value of 0.05

The medians (Table 7.41) indicate that the latent variable ‘accommodating’ is significantly different between the six age groups. The 60+ age group has the highest median score relative to the other age groups; hence, the 60+ age group’s attitudes are significantly influenced by whether the bus service is accommodating (Table 7.41). The Mann-Whitney U test is used as a post-hoc test to identify the differences between the different age groups. The tests were performed as indicated in Table 7.42.

Table 7.41 Median results from Kruskal-Wallis test for accommodating and age – Tourists, Pre-reform

| Age | N | Median |
|---|---|---|
| 51-60 | 22 | .0675059 |
| 60+ | 38 | .5232573 |
| 11-20 | 47 | -.4395370 |
| 21-30 | 50 | .0481135 |
| 31-40 | 51 | -.3584950 |
| 41-50 | 47 | .0952522 |
| Total | 255 | -.0161965 |

Table 7.42 Grouping variables for Age - Mann-Whitney U tests, Tourists, Pre-reform

| Grouping variables | |
|---|---|
| 60+ | 51-60 |
| | 41-50 |
| | 31-40 |
| | 21-30 |
| | 11-20 |
| 51-60 | 41-50 |
| | 31-40 |
| | 21-30 |
| | 11-20 |
| 41-50 | 31-40 |
| | 21-30 |
| | 11-20 |
| 31-40 | 21-30 |
| | 11-20 |
| 21-30 | 11-20 |

Where the age group was 60+, the results were statistically significant with a p-value of 0.05 (Appendix I, Table I.18). For the 51-60 age group, it was statistically significant at the p-value of 0.05 when it was grouped with the 31-40 and 11-20 age groups (Appendix I, Table I.19). The 41-50 age group was statistically significant at the p-value of 0.05 with the grouping variable 11-20 age group (Appendix I, Table I.20). The 21-30 age group was statistically significant at the p-value of 0.05 with the grouping variable 11-20 age group (Appendix I, Table I.21).

The mean ranks (Table 7.43) are the results of those grouping variables that were statistically significant in Appendix I, Tables I.18 to I.21. This means that these age groups are influenced by whether the bus service is accommodating.

The 60+ age group was influenced by whether the bus service was accommodating before the reform (Table 7.43). The 51-60 age group in relation with the 31-40 and the 11-20 age group was influenced by whether the bus service was accommodating (Table 7.43). Table 7.43 also shows that in relation to the 11-20 age group, the age groups 51-60, 41-50, and 21-30 were influenced by whether the bus service was accommodating before the reform. The mean ranks (Table 7.43) suggest that before the reform, the older the tourists were, the more they sought a bus service that was accommodating.

Table 7.43 Mean ranks from Mann-Whitney U tests for Accommodating and Age groups – Tourists, Pre-Reform

| Latent Variable | Age Group | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| | 51-60 | 22 | 23.95 | 527.00 |
| | 60+ | 38 | 34.29 | 1303.00 |
| | Total | 60 | | |
| | 60+ | 38 | 50.54 | 1920.50 |
| | 41-50 | 47 | 36.90 | 1734.50 |
| | Total | 85 | | |
| | 60+ | 38 | 59.07 | 2244.50 |
| | 31-40 | 51 | 34.52 | 1760.50 |
| | Total | 89 | | |
| | 60+ | 38 | 54.22 | 2060.50 |
| | 21-30 | 50 | 37.11 | 1855.50 |
| | Total | 88 | | |
| | 60+ | 38 | 57.97 | 2203.00 |
| Accommodating | 11-20 | 47 | 30.89 | 1452.00 |
| | Total | 85 | | |
| | 51-60 | 22 | 46.61 | 1025.50 |
| | 31-40 | 51 | 32.85 | 1675.50 |
| | Total | 73 | | |
| | 51-60 | 22 | 45.75 | 1006.50 |
| | 11-20 | 47 | 29.97 | 1408.50 |
| | Total | 69 | | |
| | 11-20 | 47 | 40.20 | 1889.50 |
| | 41-50 | 47 | 54.80 | 2575.50 |
| | Total | 94 | | |
| | 11-20 | 47 | 41.43 | 1947.00 |
| | 21-30 | 50 | 56.12 | 2806.00 |
| | Total | 97 | | |

*Post-Reform – Maltese residents*

The correlation matrix (Table 7.44) shows that there are sufficient correlations (highlighted) between the variables (greater than .30) to justify the application of the Factor Analysis (Hair et al. 2014).

Table 7.44 Correlations between variables – Maltese residents, Post-reform

| | Accessibility | Information | Time | Customer care | Fare | Comfort | Security | Impact on the Environment |
|---|---|---|---|---|---|---|---|---|
| Accessibility | - | | | | | | | |
| Information | .476 | - | | | | | | |
| Time | .409 | .393 | - | | | | | |
| Customer care | .401 | .358 | .346 | - | | | | |
| Fare | .249 | .260 | .258 | .368 | - | | | |
| Comfort | .411 | .267 | .383 | .403 | .305 | - | | |
| Security | .356 | .262 | .233 | .482 | .291 | .434 | - | |
| Impact on the Environment | .398 | .282 | .203 | .386 | .280 | .353 | .513 | - |

All correlations were statistically significant at the 95% confidence level

The Bartlett's test is statistically significant (0.0001) at the 95% confidence interval (Table 7.45). Hence, the sample size was adequate to conduct the Factor Analysis. The KMO index is meritorious (0.853), indicating that the Factor Analysis results are worth exploring.

Table 7.45 The KMO and Bartlett's Test – Maltese residents, Post-reform

| **KMO and Bartlett's Test** | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .853 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 407.887 |
| | df | 28 |
| | Sig. | 0.0001 |

The Maximum Likelihood Extraction method was used to estimate the factor loadings for the observed correlation matrix (Tabachnick & Fidell 2014). Only one factor had eigenvalues equal to or more than 1 (Factor 1: 3.460) (Table 7.46, Figure 7.48). The factor explains 42% of the variance, that is, the extent to which the factor represents the spread around the mean of the correlations (Berman Brown & Saunders 2008).

Table 7.46 Total Variance Explained – Maltese residents, Post-reform

| Factor | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 3.460 | 43.251 | 43.251 | 2.828 | 35.350 | 35.350 |
| 2 | .998 | 12.475 | 55.726 | | | |
| 3 | .799 | 9.988 | 65.714 | | | |
| 4 | .718 | 8.969 | 74.683 | | | |
| 5 | .586 | 7.321 | 82.004 | | | |
| 6 | .527 | 6.582 | 88.586 | | | |
| 7 | .485 | 6.058 | 94.644 | | | |
| 8 | .428 | 5.356 | 100.000 | | | |

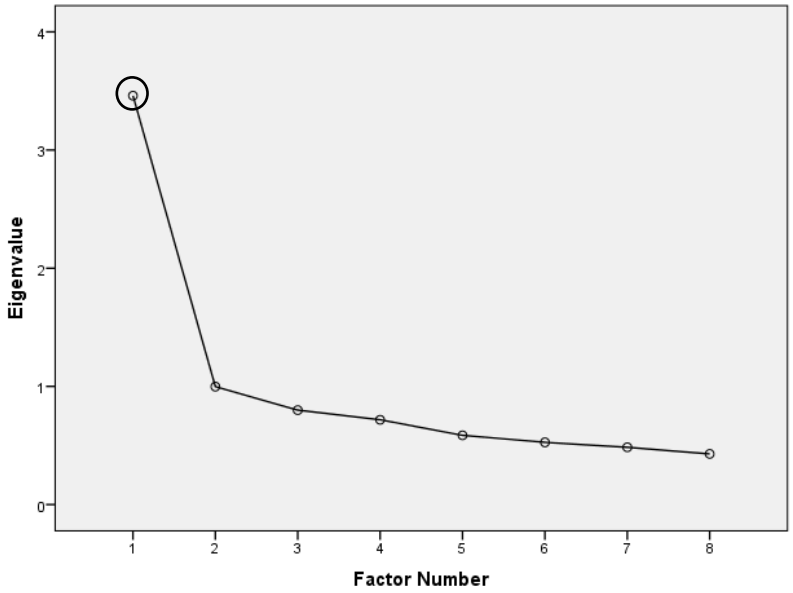


Figure 7.48 Scree plot illustrating the eigenvalue that is >1 – Maltese residents, Post-reform

In this case, since only one factor was extracted, the factor matrix (Table 7.47) is used for interpretation. The greater the factor loadings, the more the latent variable is a pure measure of the factor (Tabachnick & Fidell 2007). Referring to Table H.2 in the guidelines (Appendix H), three variables are very good (.63 and above) – 'customer experience', and 'accessibility'; good (.55 and above) – 'security', 'comfort', and 'impact on the environment'; and fair (.45 and above) – 'information', 'time', and 'fare'.

Table 7.47 Factor matrix showing the factors to interpret – Maltese residents, Post-reform

| | Factor 1 |
|---|---|
| Accessibility | .654 |
| Information | .544 |
| Time | .525 |
| Customer Experience | .673 |
| Fare | .472 |
| Comfort | .622 |
| Security | .641 |
| Impact on the Environment | .596 |

A possible description for this latent variable is '**bus service**'. This label for the latent variable derives from the reasoning that there was no particular distinction between the factor loadings. Bus service means that after the reform, the bus service system was viewed holistically because of the implemented change.

In the pre-reform Factor Analysis for Maltese residents, there were two latent variables, namely, luxury' and 'availability'. These two latent variables specifically described particular traits of the bus service offered by the PTA. The latent variable 'bus service' for the post-reform Factor Analysis can be described as generic. This description of the Arriva bus service implies an overall difference from the PTA service.

The Cronbach's alpha test was applied to check that the scale consistently reflects the construct that it is measuring (Field 2009). The resultant Cronbach's alpha was 0.808, which is above 0.70; hence, the results are highly reliable.

Next, the Kruskal-Wallis tests was performed, including the latent variable 'bus service' with the grouping variables 'gender', 'age', and 'mode use', separately. These tests were performed to identify the relationship between the grouping variables and 'bus service' (Laerd Statistics Lund Research Ltd 2013). A hypothesis was developed for each grouping variable (Table 7.48). The medians are reported for each condition

because they are appropriate for non-parametric tests (Field 2009). This test was selected because it satisfies two assumptions:

- Assumption 1: the dependent variable is ordinal or continuous; in this case, 'bus service' is continuous.
- Assumption 2: the independent variable consists of two or more categorical independent groups – gender has two categories, age has six categories, and mode use has three categories.

Table 7.48 Hypothesis for Kruskal-Wallis Tests with 'bus service', Maltese residents, Post-reform

| Grouping Variable | Hypothesis | |
|---|---|---|
| Gender | Null | The grouping variable gender is not influenced by the bus service |
| | Alternative | The grouping variable gender is influenced by the bus service |
| Age | Null | The grouping variable age is not influenced by the bus service |
| | Alternative | The grouping variable age is influenced by the bus service |
| Mode use | Null | The grouping variable mode use is not influenced by the bus service |
| | Alternative | The grouping variable mode use is influenced by the bus service |

The grouping variables 'gender' and 'mode use' were not statistically significant at the 95% confidence level; hence, the null hypothesis is accepted (Table 7.48). The grouping variable 'age' indicated a genuine statistical significance (the p-value was less than 0.05, Table 7.49). The null hypothesis for the grouping variable age - 'the grouping variable age is influenced by the bus service' - is rejected. The predominant participants in this sample, who were mostly females and elderly people, could have influenced this finding.

The medians (Table 7.50) indicate that the latent variable 'bus service' is significantly different between the six age groups. The 31-40 age group has the highest median score relative to the other age groups; hence, the 31-40 age group's attitudes are significantly influenced by the bus service after the reform (Table 7.50). The Mann-Whitney U test is used as a post-hoc test to identify the difference in groups between the different age groups. The tests were performed as indicated in Table 7.51.

Table 7.49 Kruskal-Wallis test results with the independent variable 'bus service'

| Dependent Variable | Independent Variable | Chi-Square | df | Asymp.Sig. |
|---|---|---|---|---|
| Gender | Bus service | 1.562 | 1 | 0.211 |
| Age | Bus service | 13.997 | 5 | 0.016 |
| Mode Use | Bus service | 4.436 | 2 | 0.109 |

Tested at the p-value of 0.05

Table 7.50 Median results from Kruskal-Wallis test for bus service and age – Maltese residents, Post-reform

| Age | N | Median |
|---|---|---|
| 11-20 | 20 | -.3978066 |
| 51-60 | 31 | -.1352695 |
| 21-30 | 19 | -.4479359 |
| 60+ | 68 | .4620810 |
| 31-40 | 23 | .5220166 |
| 41-50 | 41 | .0737695 |
| Total | 202 | .2034218 |

Table 7.51 Grouping variables for Age - Mann-Whitney U tests, Maltese residents, Post-reform

| Grouping variables | |
|---|---|
| | 41-50 |
| | 60+ |
| 31-40 | 21-30 |
| | 51-60 |
| | 11-20 |
| | 11-20 |
| 60+ | 51-60 |
| | 21-30 |
| | 41-50 |
| | 21-30 |
| 41-50 | 51-60 |
| | 11-20 |
| 21-30 | 51-60 |
| | 11-20 |
| 11-20 | 51-60 |

Appendix I, Tables I.22 to I.26 show the outcomes of the post-hoc tests. The age groups with a p-value of less than 0.05 were the 31-40 with the 11-20 age group (Table I.22),

and the 60+ with the 11-20 age group, and with the 21-30 age group (Table I.23). The mean ranks (Table 7.52) are the results of those grouping variables that were statistically significant in Appendix I, Tables I.22 and I.23. This means that the age groups that have the highest mean ranks (Table 7.52), 31-40 and 60+, are influenced by the bus service. This implies that post-reform, the bus service influenced the Maltese residents' attitudes in those age groups.

Table 7.52 Mean ranks from Mann-Whitney U tests for Bus service and Age groups – Maltese residents, Post-Reform

| Latent Variable | Age Group | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| Bus service | 11-20 | 20 | 17.15 | 343.00 |
| | 31-40 | 23 | 26.22 | 603.00 |
| | Total | 43 | | |
| | 11-20 | 20 | 29.30 | 586.00 |
| | 60+ | 68 | 48.97 | 3330.00 |
| | Total | 88 | | |
| | 21-30 | 19 | 31.89 | 606.00 |
| | 60+ | 68 | 47.38 | 3222.00 |
| | Total | 87 | | |

*Post-Reform - Tourists*

The correlation matrix (Table 7.53) indicates that there are sufficient correlations (highlighted) between the variables (greater than 0.30). These correlations justify the use of the Factor Analysis (Hair et al. 2014). The KMO and Bartlett's test (Table 7.54) indicate whether the data are statistically adequate to be analysed with Factor Analysis (Field 2009). This test is interpreted using the guidelines in Appendix H, Table H.1; since the KMO measure of sampling adequacy is 0.802, it is 'meritorious', that is, it is worth interpreting.

The extraction method for the Factor Analysis was the Maximum Likelihood. There were two factors with eigenvalues equal to or more than 1 (Factor 1: 3.640, and Factor 2: 1.077) (Table 7.55, Figure 7.49). These factors explained 45% and 13% of the variance, respectively (Table 7.55).

Table 7.54 Correlations between variables – Tourists, Post-Reform

| | Accessibility | Information | Time | Customer care | Fare | Comfort | Security | Impact on the Environment |
|---|---|---|---|---|---|---|---|---|
| Accessibility | - | | | | | | | |
| Information | .431 | - | | | | | | |
| Time | .516 | .491 | - | | | | | |
| Customer care | .349 | .557 | .468 | - | | | | |
| Fare | .192 | .238 | .178 | .454 | - | | | |
| Comfort | .381 | .407 | .379 | .567 | .390 | - | | |
| Security | .421 | .323 | .331 | .391 | .255 | .577 | - | |
| Impact on the Environment | .302 | .211 | .162 | .317 | .288 | .336 | .459 | - |

All correlations were statistically significant at the 95% confidence level

Table 7.53 The KMO and Bartlett's Test – Tourists, Post-Reform

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .825 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 574.288 |
| | df | 28 |
| | Sig. | .000 |

Table 7.55 Total Variance Explained – Tourists, Post-reform

| | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings |
|---|---|---|---|---|---|---|---|
| Factor | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 3.640 | 45.498 | 45.498 | 3.121 | 39.018 | 39.018 | 2.657 |
| 2 | 1.077 | 13.463 | 58.961 | .539 | 6.732 | 45.750 | 2.565 |
| 3 | .904 | 11.297 | 70.258 | | | | |
| 4 | .635 | 7.940 | 78.199 | | | | |
| 5 | .581 | 7.258 | 85.457 | | | | |
| 6 | .459 | 5.734 | 91.191 | | | | |
| 7 | .381 | 4.763 | 95.954 | | | | |
| 8 | .324 | 4.046 | 100.000 | | | | |

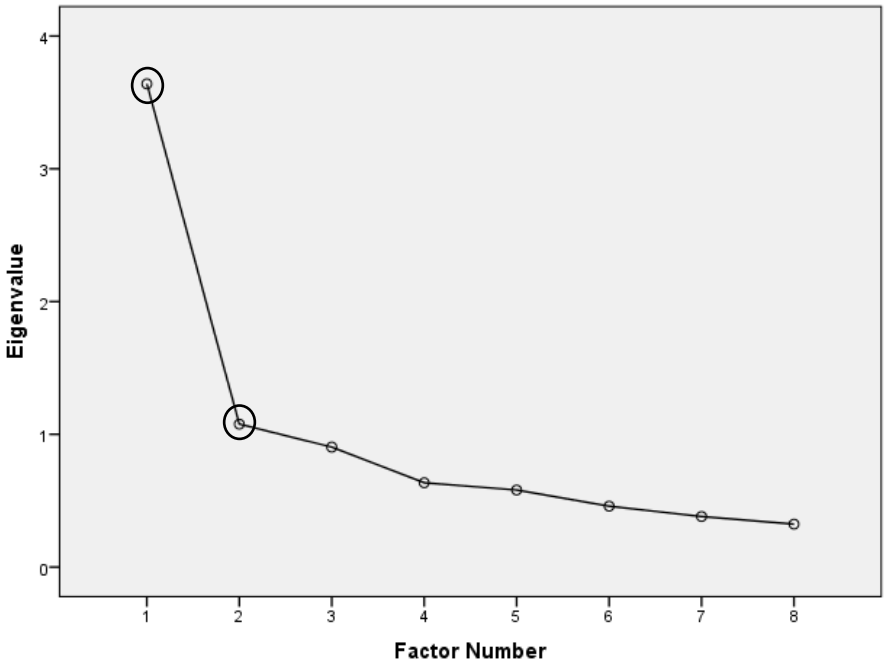


Figure 7.49 Scree plot illustrating the eigenvalues that are >1 – Tourists, Post-reform

The pattern matrix (Table 7.56) is used to interpret the factors produced. Appendix H, Table H.2 is used to interpret the factor loadings. Two factor loadings were 'very good' (.63 and above) (Table 7.56); these were 'comfort' (.692), and 'security' (.645). Another factor loading was 'good' (.55 and above), and 'impact on the environment' and 'fare' (.512) were 'fair' (.45 and above).

Table 7.56 Pattern matrix showing the factors to interpret – Tourists, Post-reform

| | Factor | |
|---|---|---|
| | 1 | 2 |
| Accessibility | .131 | -.547 |
| Information | .117 | -.603 |
| Time | -.124 | -.859 |
| Customer Experience | .430 | -.387 |
| Fare | .512 | .007 |
| Comfort | .692 | -.132 |
| Security | .645 | -.075 |
| Impact on the Environment | .579 | .072 |

A suitable name for this first latent variable is '**endurable**'. This means that the bus service after the reform was bearable in terms of the economic (fare), social (comfort and security), and environmental (impact on the environment) factors that had high factor loadings.

The second factor that had the highest factor loading is interpreted as 'excellent' (.71 and above) for 'time' (0.859). This factor loading was followed by 'information' (0.603) and 'accessibility' (0.547), which are interpreted as 'good' (.55 and above).

The name assigned to this latent variable is '**unreliability**'. After the bus service reform, there were time-related issues, and the uncertainty regarding information and accessibility contributed to further concerns.

For the tourist sample, before the reform, the latent variable that described the bus service was 'accommodating'. It seems that tourists used the bus with tolerance during the time of the Arriva service. The emergent latent variables that emerged – 'endurable' and 'unreliability' - suggest this observation.

The reliability test Cronbach's alpha was applied to the eight pre-defined bus service quality characteristics. This test checks that the scale consistently reflects the construct that it is measuring (Field 2009). The resultant Cronbach's alpha (0.820) indicated high reliability for the results.

Next, Kruskal-Wallis tests were performed, including the latent variable 'endurable' with the grouping variables 'gender', 'age', and 'mode use', separately. These tests were performed to identify the relationship between the grouping variables and whether the bus service offered by Arriva was endurable (Laerd Statistics Lund Research Ltd 2013). A hypothesis was developed for each grouping variable (Table 7.57). The medians are reported for each condition because they are appropriate for non-parametric tests (Field 2009). This test was selected because it satisfies two assumptions:

- Assumption 1: the dependent variable is ordinal or continuous; in this case, 'endurable' is continuous.

- Assumption 2: the independent variable consists of two or more categorical independent groups; ‘gender’ has two categories, ‘age’ has six categories, and ‘mode use’ has four categories, in the case of tourists.

Table 7.57 Hypothesis for Kruskal-Wallis Tests with ‘endurable’, Tourists, Post-reform

| Grouping Variable | Hypothesis | |
|---|---|---|
| Gender | Null | The grouping variable gender is not influenced by whether the bus service is endurable |
| | Alternative | The grouping variable gender is influenced by whether the bus service is endurable |
| Age | Null | The grouping variable age is not influenced by whether the bus service is endurable |
| | Alternative | The grouping variable age is influenced by whether the bus service is endurable |
| Mode use | Null | The grouping variable mode use is not influenced by whether the bus service is endurable |
| | Alternative | The grouping variable mode use is influenced by whether the bus service is endurable |

Out of the three grouping variables, only age indicated a genuine statistical significance (the p-value was less than 0.05, Table 7.58). This implies that for the grouping variables gender and mode use, the null hypothesis is accepted (Table 7.57). The null hypothesis for the grouping variable age - ‘the grouping variable age is influenced by whether the bus service is endurable’- is rejected.

The medians (Table 7.59) indicate that the latent variable ‘endurable’ is significantly different between the six age groups. The 60+ age group has the highest median score relative to the other age groups (Table 7.59); hence, the 60+ age group’s attitudes are significantly influenced by whether the bus service is endurable since the reform. The Mann-Whitney U test is used as a post-hoc test to identify the difference in groups between the different age groups. The tests were performed as indicated in Table 7.60.

Table 7.58 Kruskal-Wallis test results with the independent variable ‘endurable’

| Dependent Variable | Independent Variable | Chi-Square | df | Asymp.Sig. |
|---|---|---|---|---|
| Gender | Endurable | 1.603 | 1 | 0.205 |
| Age | Endurable | 17.43 | 5 | 0.004 |
| Mode Use | Endurable | 7.397 | 3 | 0.060 |

Tested at the p-value of 0.05

Table 7.59 Median results from Kruskal Wallis test for endurable and age – Tourists, Post-reform

| Age | N | Median |
|---|---|---|
| 51-60 | 21 | .4272960 |
| 60+ | 18 | .8135578 |
| 11-20 | 46 | -.1958791 |
| 21-30 | 76 | -.2876370 |
| 31-40 | 35 | -.0862133 |
| 41-50 | 29 | .3586615 |
| Total | 225 | .0252506 |

Table 7.60 Grouping variables for Age - Mann-Whitney U tests, Tourists, Post-reform

| Grouping variables | |
|---|---|
| 60+ | 51-60 |
| | 41-50 |
| | 31-40 |
| | 21-30 |
| | 11-20 |
| 51-60 | 41-50 |
| | 31-40 |
| | 21-30 |
| | 11-20 |
| 41-50 | 31-40 |
| | 21-30 |
| | 11-20 |
| 31-40 | 21-30 |
| | 11-20 |
| 21-30 | 11-20 |

Appendix I, Tables I.27 to I.31 show the outcomes of the post-hoc tests. The age groups with a p-value of less than 0.05, were the 60+ age group with the 21-30 and 11-20 age groups (Table I.27), and the 51-60 age group with the 31-40, 21-30 and 11-20 age groups (Table I.28), and the 41-50 age group with the 21-30 and 11-20 age groups (Table I.29). The mean ranks in Table 7.60 are the results of those grouping variables that were statistically significant in Appendix I Tables I.27, I.28, and I.29. This means that the age groups that have the highest mean ranks in Table 7.61, that is, 60+, 51-60, and 41-50, are influenced by whether the bus service is endurable. This implies that post-reform, the older the tourists, the more likely they were to be influenced by whether the bus service was endurable.

Table 7.61 Mean ranks from Mann-Whitney U tests for Endurable and Age groups – Tourists, Post-Reform

| Latent Variable | Age Group | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| Endurable | 60+ | 18 | 59.36 | 1068.50 |
| | 21-30 | 76 | 44.69 | 3396.50 |
| | Total | 94 | | |
| | 60+ | 18 | 40.53 | 729.50 |
| | 11-20 | 46 | 29.36 | 1350.50 |
| | Total | 64 | | |
| | 51-60 | 21 | 34.33 | 721.00 |
| | 31-40 | 35 | 25.00 | 875.00 |
| | Total | 56 | | |
| | 51-60 | 21 | 66.29 | 1392.00 |
| | 21-30 | 76 | 44.22 | 3361.00 |
| | Total | 97 | | |
| | 51-60 | 21 | 43.33 | 910.00 |
| | 11-20 | 46 | 29.74 | 1368.00 |
| | Total | 67 | | |
| | 21-30 | 76 | 48.14 | 3658.50 |
| | 41-50 | 29 | 65.74 | 1906.50 |
| | Total | 105 | | |
| | 11-20 | 46 | 33.95 | 1561.50 |
| | 41-50 | 29 | 44.43 | 1288.50 |
| | Total | 75 | | |

Kruskal-Wallis tests were also performed with the latent variable ‘unreliability’, and the grouping variables gender, age, and mode use, separately. These tests were performed to identify the relationship between the grouping variables and the unreliability of the Arriva service (Laerd Statistics Lund Research Ltd 2013). A hypothesis was developed for each grouping variable (Table 7.62). The medians are reported for each condition because they are appropriate for non-parametric tests (Field 2009). This test was selected because it satisfies two assumptions:

- Assumption 1: the dependent variable is ordinal or continuous; in this case, ‘unreliability’ is continuous.
- Assumption 2: the independent variable consists of two or more categorical independent groups; gender has two categories, age has six categories, and mode use has four categories in the case of tourists.

Table 7.62 Hypothesis for Kruskal-Wallis Tests for ‘unreliability’, Tourists, Post-reform

| Grouping Variable | Hypothesis | |
|---|---|---|
| Gender | Null | The grouping variable gender is not influenced by whether the bus service is unreliable |
| | Alternative | The grouping variable gender is influenced by whether the bus service is unreliable |
| Age | Null | The grouping variable age is not influenced by whether the bus service is unreliable |
| | Alternative | The grouping variable age is influenced by whether the bus service is unreliable |
| Mode use | Null | The grouping variable age is not influenced by whether the bus service is unreliable |
| | Alternative | The grouping variable age is influenced by whether the bus service is unreliable |

The grouping variable age indicated a genuine statistical significance (the p-value was less than 0.05, Table 7.63). This implies that for the grouping variables gender and mode use, the null hypothesis is accepted (Table 7.62). The null hypothesis for the grouping variable age - ‘the grouping variable age is influenced by whether the bus service is unreliable’ - is rejected.

Table 7.63 Kruskal-Wallis test results with the independent variable ‘unreliable’

| Dependent Variable | Independent Variable | Chi-Square | df | Asymp.Sig. |
|---|---|---|---|---|
| Gender | Unreliable | 2.212 | 1 | 0.137 |
| Age | Unreliable | 17.863 | 5 | 0.003 |
| Mode Use | Unreliable | 2.317 | 3 | 0.509 |

Tested at the p-value of 0.05

The medians (Table 7.64) indicate that the latent variable ‘unreliable’ is significantly different between the six age groups. The 21-30 age group has the highest median score relative to the other age groups (Table 7.65); hence, the 21-30 age group’s attitudes are significantly influenced by the unreliability of the Arriva service. The Mann-Whitney U test is used as a post-hoc test to identify the difference in groups between the different age groups (Table 7.65).

Table 7.64 Median results from Kruskal-Wallis test for unreliable and age – Tourists, Post-reform

| Age | N | Median |
|---|---|---|
| 51-60 | 21 | -1.0188007 |
| 60+ | 18 | -.0231676 |
| 11-20 | 46 | -.1456709 |
| 21-30 | 76 | .1694515 |
| 31-40 | 35 | -.0126403 |
| 41-50 | 29 | -.3584723 |
| Total | 225 | -.0499880 |

Table 7.65 Grouping variables for Age and Unreliable - Mann-Whitney U tests, Tourists, Post-reform

| Grouping variables | |
|---|---|
| 21-30 | 11-20 |
| | 31-40 |
| | 41-50 |
| | 51-60 |
| | 60+ |
| 11-20 | 31-40 |
| | 41-50 |
| | 51-60 |
| | 60+ |
| 31-40 | 41-50 |
| | 51-60 |
| | 60+ |
| 41-50 | 51-60 |
| | 60+ |
| 51-60 | 60+ |

Appendix I Tables I.32 to I.34 show the outcomes of the post-hoc tests. The age groups with a p-value of less than 0.05 were the 21-30 age group with the 41-50 and 51-60 age groups (Table I.32), the 11-20 age group with the 51-60 age group (Table I.33), and the 31-40 age group with the 51-60 age group (Table I.34). The mean ranks (Table 7.66) are the results of those grouping variables that were statistically significant in Appendix I Tables I.32, I.33, and I.34. This means that the age groups that have the highest mean ranks, specifically, 21-30, 11-20, and 31-40, are influenced by the unreliability of the Arriva bus service. This implies that post-reform, the younger the tourists, the more likely they were to be influenced by whether the bus service was unreliable.

Table 7.66 Mean ranks from Mann-Whitney U tests for Unreliable and Age groups – Tourists, Post-Reform

| Latent Variable | Age Group | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| Unreliable | 21-30 | 76 | 58.28 | 4429.50 |
| | 41-50 | 29 | 39.16 | 1135.50 |
| | Total | 105 | | |
| | 51-60 | 21 | 29.48 | 619.00 |
| | 21-30 | 76 | 54.39 | 4134.00 |
| | Total | 97 | | |
| | 51-60 | 21 | 24.95 | 524.00 |
| | 11-20 | 46 | 38.13 | 1754.00 |
| | Total | 67 | | |
| | 51-60 | 21 | 21.19 | 445.00 |
| | 31-40 | 35 | 32.89 | 1151.00 |
| | Total | 56 | | |

### 7.2.4 Discussion – Attitudes and Perceived Confidence

The relationships used in section 7.2 between the variables of each population sample before and after the reform are summarised in Table 7.67. These interactions were used to answer RQ 2 *How did the bus reform change attitudes and perceived confidence regarding using the bus?*

Table 7.67 A summary of the relationships of the population samples, pre-and post-reform

| Population samples | Reform: Pre | Reform: Post |
|---|---|---|
| Maltese residents | Test relationships between opinion on bus service quality characteristics and mode use, and gender and age | Test relationships between opinion on bus service quality characteristics and mode use, and gender and age |
| | Measured attitudes, identified latent variables and tested the relationship between the latent variables and mode use, gender and age | Measured attitudes, identified latent variables and tested the relationship between the latent variables and mode use, gender and age |
| Tourists | Test relationships between opinion on bus service quality characteristics and mode use, and gender and age | Test relationships between opinion on bus service quality characteristics and mode use, and gender and age |
| | Measured attitudes, identified latent variables and tested the relationship between the latent variables and mode use, gender and age | Measured attitudes, identified latent variables and tested the relationship between the latent variables and mode use, gender and age |

Before the reform, Maltese residents that used all modes generally considered ‘fare’ as ‘nearly the best’ or ‘the best’. After the reform, Maltese resident bus users in particular

considered customer care and comfort as nearly the best and the best. These opinions indicate that the Arriva service brought some improvements to the bus service in Malta.

With the tourist population samples, it was more feasible to explore the percentage changes before and after the reform. Hence, this dataset made it possible to identify that for tourists, there was a percentage increase in the participants who thought that 'time' became worse after the reform. Comfort and security became generally nearly the best and the best. Regarding the 'impact on the environment', tourists' opinion was that this was no longer the worst.

For the Maltese residents, mode use was the variable that influenced their opinions. The demographic variables ('gender' and 'age') do not seem to have an effect on attitudes and perceived confidence. This finding was supported when attitudes were measured and the relationships with age and gender were tested. Bus users were influenced by the 'availability' of the bus service. The more participants use the bus service, the more likely they are to depend on it (because they do not have any alternative means of transport) and to have a positive opinion about it.

The tourists sample was different from the Maltese residents sample because in this case, the age groups seemed to influence the tourists' attitudes and perceived confidence to use the bus. Regarding 'time', the percentage changes for 'worst' and 'nearly the worst' increased for the age groups 11-20, 21-30, 51-60, and 60+ age groups. Regarding 'customer care' and 'comfort' generally, the opinion was 'nearly the best' and 'the best' for tourists. This result resonates with the opinion of Maltese resident bus users about these service qualities, possibly because even the tourists had a relatively high percentage (69%) who were bus users.

When attitudes were measured and the relationships were tested for the tourist samples pre- and post-reform, 'age' featured as the variable that influences attitudes and perceived confidence to use the bus. Before the reform, the elderly age groups were influenced by whether the bus service was accommodating, that is, whether it suits the tourists' needs. After the reform, the issues with time seemed to influence negatively the tourists' attitudes and perceived confidence to use the bus. The elderly age groups were

influenced by the extent to which they could endure the bus service while the younger age groups were influenced by the unreliability of the Arriva service.

For Maltese residents, ‘mode use’ influenced the attitudes and the perceived confidence to use the bus while for tourists, age seemed to influence bus use. Evidently, time-related issues had a negative impact on the attitudes and perceived confidence. The results in section 7.2 show that tourists were affected negatively by this issue. For Maltese resident bus users, this was surely a concern.

# Chapter 8 Impact of Bus Reform on Bus Use

This chapter provides results related to RQ.3, *How did the bus reform influence capability and opportunity to use the bus, and, thus bus use?* Figure 8.1 illustrates the parts of the conceptual model (marked in bold) that are addressed in this chapter.

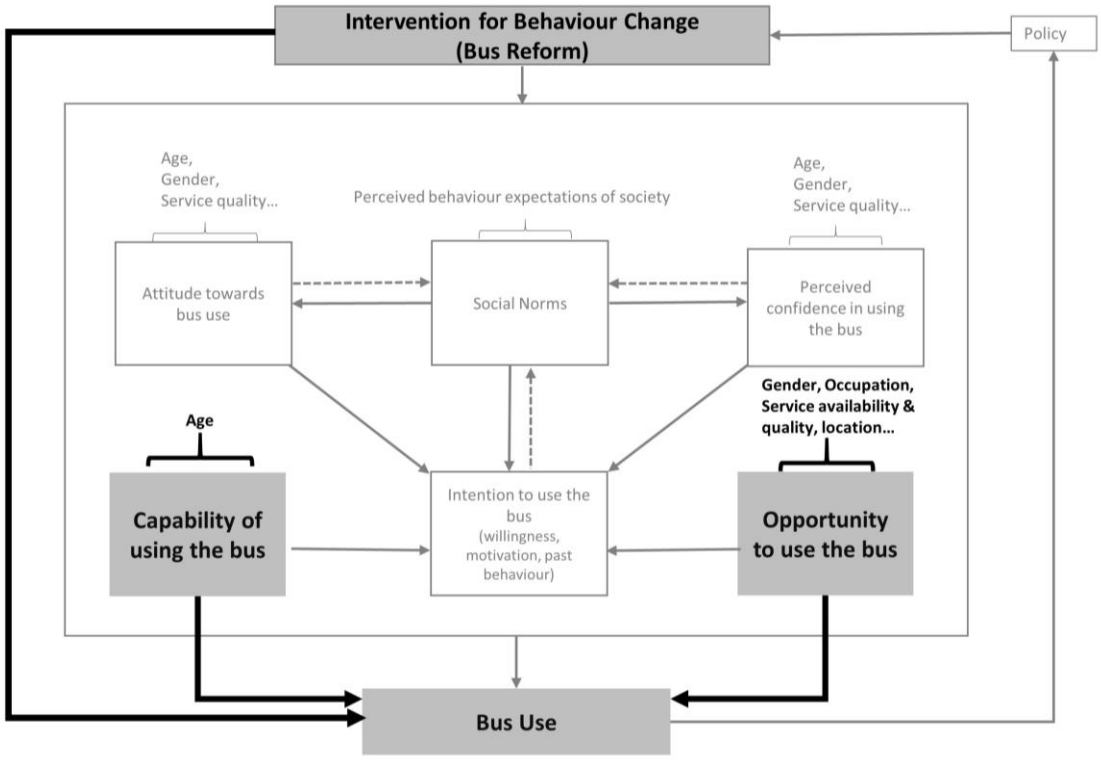


Figure 8.1 Parts of the conceptual model to address RQ.3

## 8.1 Capability

In Chapter 3, section 3.6.2, capability is interpreted as the individual's physical and mental ability to use the bus. Section 3.7 discusses that in the context of this research, 'age' is the best possible variable that represents physical and mental ability. When discussing factors that influence bus use in Chapter 2, section 2.10.1, literature suggests that regarding age, people under 17 years old and senior citizens are more likely to use the bus.

A promised improvement in the Arriva service that specifically targeted capability was low-floor vehicles (Chapter 4, section 4.10). On referring to the variable 'age', elderly people find it easier to access a low-floor vehicle rather than having to climb high steps, as was the case with the PTA service. As discussed in section 4.11, however, some of the fleet in the Arriva service, had to be sub-contracted to solve the time-related issues, and these sub-contracted vehicles had high steps. Therefore, this situation must have influenced in some way the behaviour of people based on their capabilities.

## 8.2 Opportunity

Opportunity is interpreted as the physical and social aspects that make the behaviour possible (Chapter 3, section 3.7). In the context of this research, the variables 'gender' and 'occupation' measure the social aspects. Furthermore, as explained in Chapter 3, section 3.7, it is assumed that with the bus reform, the bus service would remain available. Hence, implicitly, the reform provided the opportunity to use the bus. The physical aspects of opportunity are measured through 'service quality', 'location of participants', 'perceived average time taken to reach destination', 'preferred walking distance to bus stop', and 'preferred number of bus connections' (Chapter 3, section 3.7). Regarding tourists, as discussed in Chapter 3, section 3.7, 'occupation' was replaced by 'length of stay', 'type of accommodation', and 'reason for visiting'.

The fare structure of the new service (Chapter 4, Table 4.4) was designed to benefit the frequent bus user. Thus, the Arriva service was designed to provide the opportunity for people to use the bus.

The other service quality characteristics were included in the service level agreement to provide a minimum level of service, which aimed to enhance the opportunity for bus use. For instance, 'accessibility' included vehicle accessibility and network. As planned, the network had to reduce the amount of time spent going into Valletta to change to other routes (Chapter 4, sub-section 4.10.2). The promised typical frequency of buses at bus stops was 10 minutes (Chapter 4, Table 4.4). Information had to be provided in different ways, including online and on-board vehicles (Chapter 4, sub-section 4.10.4). Furthermore, vehicles had to be at least Euro V compliant to improve the impact on the environment (Chapter 4, sub-section 4.10.3).

However, shortcomings arose (Chapter 4, section 4.11). There were operational, political, service level problems, and problems with the fleet amongst others mentioned in Chapter 4, Table 4.5. As explored in Chapter 6, section 6.6, the one major issue was 'time'. Time-related issues can result from bad operations (e.g., wrong timing of dispatching buses) and unsuitable infrastructure. This service quality characteristic can also have repercussions on other characteristics, thus influencing negatively the variable opportunity.

## 8.3 Change in Bus Use

This section determines the percentage difference in mode use after the reform. This difference is calculated for both Maltese residents and tourists. As indicated in Chapter 6, sub-sections 6.1.1 and 6.1.2, and Appendix A, the modes for Maltese residents were car, bus, and other, and the modes for tourists were hired car, bus, private coach, and other. As in the previous chapters, the analysis focuses on bus and car, because in the context of this study, they are considered the main competitors on the road.

### 8.3.1 Maltese Residents

Chapter 6, sub-section 6.1.1 explored how for Maltese residents, both car use and bus use increased after the reform. For car use, there was a large difference, and for bus use, the difference was minor. Table 8.1 shows the percentage difference in mode use after the reform.

Table 8.1 Percentage difference in mode use after the bus service reform – Maltese residents

| Mode use | Pre (%) | Post (%) | % Difference |
|---|---|---|---|
| Car | 49 | 65 | 16 |
| Bus | 31 | 33 | 2 |
| Other | 20 | 3 | -17 |

### 8.3.2 Tourists

In the tourist population sample, bus use increased after the reform, and hired car use decreased (Chapter 6, sub-section 6.1.2). Table 8.2 shows the percentage difference in mode use for tourists after the reform.

Table 8.2 Percentage difference in mode use after the bus service reform – Tourists

| Mode use | Pre (%) | Post (%) | % Difference |
|---|---|---|---|
| Hired Car | 24 | 20 | -4 |
| Bus | 55 | 69 | 14 |
| Private Coach | 15 | 2 | -13 |
| Other | 6 | 9 | 3 |

## 8.4 Exploring capability and opportunity

The questionnaires were part of a cross-sectional study (Chapter 5, sub-section 5.4.4). Hence, it is not possible to infer changes over time or state the causal nature of any relationship between the factors (Cramer & Howitt 2004). The assumptions used for MNL are provided in Chapter 5, sub-section 5.6.1.

Six models are presented, using MNL, that is, three models each for the Maltese resident and the tourist samples. The models include separate pre- and post-reform models, and a combined and interactions model.

The MNL models are used to determine the factors that influence the likelihood of bus use compared to car use. In each model, the dependent variable is mode use (Chapter 5, sub-section 5.6.1). Table 8.3 shows the dependent variable for Maltese residents and for tourists. The reference category for the dependent variable mode use for Maltese residents is car, and for tourists it is hired car.

Table 8.3 The dependent variable for MNL models

| Population Sample | Name | Reference Category | Categories | Description |
|---|---|---|---|---|
| Maltese residents | Mode use | Car | | Particpants who are car users |
| | | | Bus | Participants who are bus users |
| | | | Other | Participants who use modes such as walking and cycling |
| Tourists | Mode use | Hired car | | Particpants who are hired car users |
| | | | Bus | Participants who are bus users |
| | | | Private coach | Participants who have organised transport by their tourist agents or hotels |
| | | | Other | Participants who use modes such as walking and cycling |

Table 8.4 illustrates the potential independent variables for Maltese residents and tourists. All the variables were considered as categorical, and the categories are listed in the relevant column (Table 8.4). Reference categories were chosen because they were generally the largest categories in each sample (e.g., Northern Harbour District); they were a normative category, meaning the most logical (e.g., professional); or they were important categories for comparison (e.g., Best) (Grace-Martin 2017).

Sections 8.5 and 8.6 present the models for Maltese residents and tourists. Before each model was applied, a Pearson correlation (*r*) was carried out to test the level of association between mode use and the independent variables. After that, Pearson Chi-Square tests ($X^2$) were performed to test the relationship between mode use and the independent variables. After the selection of the independent variables following *r* and $X^2$, the model structure relevant to the conceptual model in Figure 8.1 is presented. The MNL model follows. The best model was selected following interpretations of two criteria: -2 Log Likelihood (-2LL) and Akaike Information (AIC). The optimal model has the values of these criteria closer to the intercept model. The selected best model was assessed for residuals and influential cases (Chapter 5, sub-section 5.6.1).

Table 8.4 Potential independent variables for Maltese residents and tourists

| Independent Variable | Code | Reference Categories | Categories | Description | Population Sample | |
|---|---|---|---|---|---|---|
| | | | | | Maltese residents | Tourists |
| Gender** | G | Female | Male | The sex of the participants | ✓ | ✓ |
| Age* | A | 41-50 | 11-20<br>21-30<br>31-40<br>51-60<br>60+ | The age group of the participants | ✓ | ✓ |
| Occupation** | OCC | Professional | Unemployed<br>Elementary Occupation<br>Student<br>Housekeeper<br>Retired<br>Service Worker | The type of employment of the participants | ✓ | x |
| District Origin** | DO | Northern Harbour | Gozo & Comino<br>Western<br>South Eastern<br>Northern<br>Southern Harbour | The district where the participants reside | ✓ | ✓ |
| District Destination** | DD | Northern Harbour | Gozo & Comino<br>Western<br>South Eastern<br>Northern<br>Southern Harbour | The district where the participants travel to most frequently, using the most frequent mode used | ✓ | x |
| Service Quality** | Accessibility<br>Information<br>Time<br>Fare<br>Customer Care<br>Comfort<br>Security<br>Impact on the Environment | Best | Worst<br>Nearly the Worst<br>Unsure<br>Nearly the Best | Categories for the ratings given to each of the eight service quality characteristics | ✓ | ✓ |
| Length of Stay** | LOS | 4-7 nights | 21+nights<br>15-21 nights<br>1-3 nights<br>8-14 nights | A range of the number of nights that tourists stayed in Malta | x | ✓ |
| Accommodation | Accomm | 3 Star Hotel | Other<br>Host Family<br>Guest House<br>5 Star Hotel<br>4 Star Hotel | The type of accommodation in which tourists stayed while in Malta | x | ✓ |

| Independent Variable | Code | Reference Categories | Categories | Description | Population Sample | |
|---|---|---|---|---|---|---|
| | | | | | Maltese residents | Tourists |
| Reason for Visiting** | RfV | Holiday | Other<br>Education<br>Business | The main purpose for the tourists visiting Malta | x | ✓ |
| Perceived Average Time Taken to Reach Destination** | AvTTD | 16-20 mins | 0-15 mins<br>21-30 mins<br>31-60 mins<br>60+ | The participants perception of the average time taken to reach their destination with their frequent mode transport used | ✓ | ✓ |
| Preferred Bus Stop Distance** | BSD | 0-5 mins | 6-10 mins<br>11-15 mins<br>16-20 mins<br>21-30 mins | The participants preferred amount of bus stop distance in ranges of minutes | ✓ | ✓ |
| Preferred amount of Bus Connections** | BC | 0 | 1<br>2<br>3 | The participants preferred amount of interchanges | ✓ | ✓ |
| Reform | Reform | PRE | POST | Before or after the reform | ✓ | ✓ |

* Represents capability in the conceptual model
**Represents opportunity in the conceptual model
✓Measured
x Not measured

## 8.5 MNL for Maltese residents

### 8.5.1 MNL – Maltese residents, pre-reform

The Pearson correlation performed between 'mode use', 'occupation', and 'fare' was statistically significant at the 99% confidence interval. The levels of association were low (Table 8.5).

Table 8.5 Pearson correlation of mode use with occupation and fare – Maltese residents, Pre-reform

| | Pearson Correlation |
|---|---|
| Occupation | -.155** |
| Fare | .175** |

**. Correlation is significant at the 0.01 level (2-tailed).

Chi-Square tests were performed to identify the level of influence between 'mode use', 'occupation', and 'fare'. Results were statistically significant at the 95% confidence interval. For 'occupation', $X^2 = 67.99$, p = 0.001, and 'fare' $X^2 = 26.4$, p = 0.001. 'Mode use' and 'occupation' indicate a strong relationship, while 'mode use' and 'fare' have a relatively weak relationship. Relevant cross tabulations are available in Appendix J, Tables J.1 and J.2.

Figure 8.2 represents the model structure for MNL1, which is the MNL for Maltese residents pre-reform. This model shows 'opportunity' only because in the conceptual model, 'occupation' and service quality ('fare') are variables that influence 'opportunity'. As explained in Chapter 3, sub-section 3.5.2, bus use refers to behaviour, and behaviour is explained as participants who would use either the bus or the rest of the modes of transport, which in the case of Maltese residents, would be car and other.

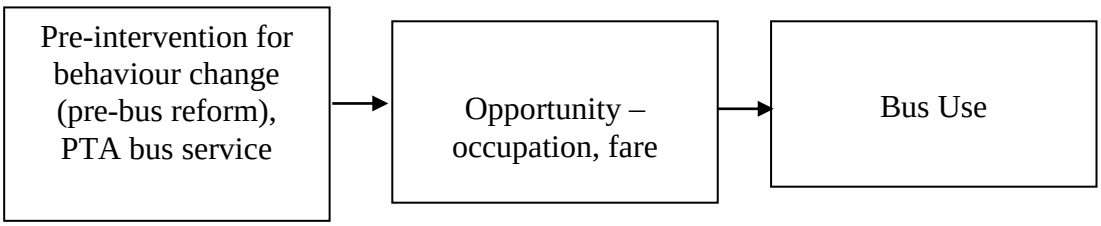


Figure 8.2 Model structure – MNL1 Maltese residents, pre-reform

The reference categories are as follows: 'mode use' – car, 'occupation' – professional, and service quality 'fare' – best. The population sample for the pre-reform model (MNL1) was 390. The AIC and -2LL criteria had improved values in the final model (Table 8.6). These low values indicate a good fit of the model MNL1 in Table 8.7.

Table 8.6 Model Fitting Information – MNL 1 Maltese residents, Pre-Reform

| Model Fitting Information | | | | | | |
|---|---|---|---|---|---|---|
| | Model Fitting Criteria | | | Likelihood Ratio Tests | | |
| Model | AIC | BIC | -2 Log Likelihood | Chi-Square | df | Sig. |
| Intercept Only | 251.84 | 259.73 | 247.84 | | | |
| Final | 200.35 | 287.09 | 156.35 | 91.49 | 20 | 0.001 |

Table 8.7 MNL 1 Maltese residents, pre-reform

Reference category = Car

| Mode Use | | B | Std. Error | Sig. | Exp(B) |
|---|---|---|---|---|---|
| Bus | Intercept | -1.55 | 0.61 | 0.01 | |
| | [OCC=Professional] = 0 | | | | |
| | [OCC=Unemployed] | 2.68 | 0.84 | 0.00 | 14.54 |
| | [OCC=Elementary Occupation] | 0.95 | 0.77 | 0.22 | 2.59 |
| | [OCC=Student] | 3.97 | 0.80 | 0.00 | 53.19 |
| | [OCC=Housekeeper] | 1.55 | 0.67 | 0.02 | 4.73 |
| | [OCC=Retired] | 1.72 | 0.73 | 0.02 | 5.56 |
| | [OCC=Service Worker] | 1.84 | 0.66 | 0.01 | 6.29 |
| | [Fare=Best] = 0 | | | | |
| | [Fare=Worst] | -1.94 | 1.40 | 0.17 | 0.14 |
| | [Fare=Nearly the Worst] | -1.81 | 0.79 | 0.02 | 0.16 |
| | [Fare=Unsure] | -1.21 | 0.43 | 0.00 | 0.30 |
| | [Fare=Nearly the Best] | -1.12 | 0.35 | 0.00 | 0.32 |
| Other | Intercept | -1.60 | 0.56 | 0.00 | |
| | [OCC=Professional] = 0 | | | | |
| | [OCC=Unemployed] | 1.95 | 0.83 | 0.02 | 7.01 |
| | [OCC=Elementary Occupation] | 1.21 | 0.68 | 0.07 | 3.37 |
| | [OCC=Student] | 2.17 | 0.85 | 0.01 | 8.78 |
| | [OCC=Housekeeper] | 1.34 | 0.60 | 0.02 | 3.82 |
| | [OCC=Retired] | 1.75 | 0.66 | 0.01 | 5.76 |
| | [OCC=Service Worker] | 1.07 | 0.63 | 0.09 | 2.90 |
| | [Fare=Best] = 0 | | | | |
| | [Fare=Worst] | -1.21 | 1.28 | 0.34 | 0.30 |
| | [Fare=Nearly the Worst] | -2.23 | 1.19 | 0.06 | 0.11 |
| | [Fare=Unsure] | -0.66 | 0.43 | 0.12 | 0.52 |
| | [Fare=Nearly the Best] | -0.47 | 0.34 | 0.17 | 0.62 |

Initial -2 log likelihood (247.8)

Model improvement (156.4*)

*significant for p-value of 0.05

Pseudo R-Square: Nagelkerke 24%

N = 390

MNL 1 was assessed for residual and influential cases. Table 8.8 shows the criteria used to assess model MNL 1. In the case of the standardized and studentized residuals only .3% of the cases had values of 2.05 and 2.06, which as discussed in Chapter 5, sub-section 5.6.1, is not of concern for the model. Regarding the influential cases (Table 8.8) DFBeta and Cook's Distance were less than 1, and the leverage statistics were close to 0; these statistics indicate that the model has a good fit.

Table 8.8 Model assessment for MNL 1 Maltese residents, pre-reform

| Model Assessment | | | | | |
|---|---|---|---|---|---|
| | Minimum | Maximum | Mean | Std. Deviation | N |
| Residuals | | | | | |
| Std. Residual | -1.43 | 2.05 | 0.00 | 1.00 | 381 |
| Stud. Residual | -1.44 | 2.06 | 0.00 | 1.00 | 381 |
| Influential cases | | | | | |
| DFFIT | -0.02 | 0.06 | 0.00 | 0.01 | 381 |
| DFBETA Intercept | -0.03 | 0.08 | 0.00 | 0.01 | 381 |
| DFBETA OCC | 0.00 | 0.00 | 0.00 | 0.00 | 381 |
| DFBETA Fare | -0.01 | 0.00 | 0.00 | 0.00 | 381 |
| Cook's Distance | 0.00 | 0.05 | 0.00 | 0.00 | 381 |
| Centered Leverage Value | 0.00 | 0.03 | 0.01 | 0.00 | 381 |

MNL 1 shows that before the reform, all else being equal, a Maltese resident car user who was a professional and who rated the bus service quality ‘fare’ as the best was 1.55 times less likely to use the bus (Table 8.7). Regarding occupation, compared to professionals, nearly all (except for elementary occupation, $p = 0.22$) other occupations demonstrated statistical significance ($p = < 0.05$) for being more likely to use the bus. Students were 3.97 times more likely than were professionals to use the bus pre-reform. These were followed by unemployed persons (2.68 times more likely to use the bus than professionals) (Table 8.7). This finding suggests that before the reform, only those groups who probably could not afford a car used the bus. This suggestion reflects the car-oriented mentality of Maltese society discussed in Chapter 4, section 4.6. Unemployed persons were followed by service workers, retired and housekeepers (1.84, 1.72, and 1.55 times more likely to use the bus than professionals). Before the reform, compared to professionals, lower paying occupations were more likely to use the bus.

As with bus users, the ‘other’ modes of transport, which mainly included active travel (walking and cycling), when compared to professionals were likely to use other modes than the car. Once again, here, students topped the list; they were 2.17 times more likely to use other modes than the car, and they were followed by unemployed and retired (1.95, and 1.75 more likely to use other modes than the car).

Regarding ‘fare’, the ratings from ‘nearly the worst’ to ‘nearly the best’ indicate that in comparison to the rating ‘the best’, participants were less likely to use the bus (Table 8.7). This finding suggests that pre-reform, the fare structure had to be the best for

participants to use the bus. In fact, pre-reform, the fare for the bus service was quite low (Chapter 4, section 4.8).

Opportunity determined bus use before the reform. In addition, the affordability of the bus service was an important factor. This was even more so when considering that the categories that were more likely to use the bus were students and the unemployed, as these groups have low or no income.

### 8.5.2 MNL – Maltese residents, post-reform

A Pearson correlation determined that mode use was associated with 'occupation' and 'district destination'. Table 8.9, however, shows that the association was weak between 'mode use' and 'occupation', and 'mode use' and 'district destination'. These results were statistically significant at the 99% confidence interval (mode use and occupation), and the 95% confidence interval (mode use and district destination).

Table 8.9 Pearson correlation of mode use with occupation and district destination – Maltese residents, Post-reform

| | Pearson Correlation |
|---|---|
| Occupation | -.169** |
| District Destination | .126* |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The levels of influence between mode use, occupation, and district destination were tested using Chi-Square tests. Results were statistically significant at the 95% confidence interval. For occupation, $X^2 = 30.33$, $p = 0.002$, and district destination $X^2 = 41.79$, $p = 0.001$. Both relationships were relatively strong. Relevant cross tabulations are available in Appendix J, Tables J.3 and J.4.

The model structure for MNL 2, the Maltese residents post-reform, is illustrated in Figure 8.3. The reform seems to have possibly influenced the opportunity of Maltese residents to use the bus.

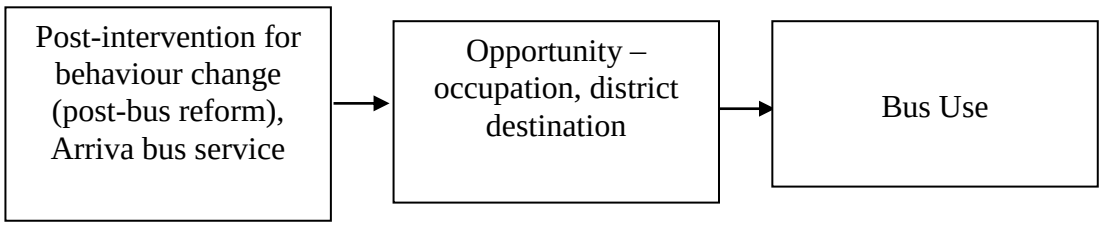


Figure 8.3 Model structure – MNL2 Maltese residents, post-reform

The reference categories for the factors in the model are as follows: 'mode use' – car, 'occupation' – professional, and 'district destination' – Northern Harbour District. The AIC and -2LL criteria had improved values in the final model (Table 8.10). These low values indicate a good fit of the model MNL2 in Table 8.12.

Table 8.10 Model Fitting Information – MNL 2 Maltese residents, Post-Reform

Model Fitting Information

| | Model Fitting Criteria | | | Likelihood Ratio Tests | | |
|---|---|---|---|---|---|---|
| Model | AIC | BIC | -2 Log Likelihood | Chi-Square | df | Sig. |
| Intercept Only | 203.93 | 211.89 | 199.93 | | | |
| Final | 164.51 | 260.00 | 116.51 | 83.43 | 22 | .001 |

Table 8.11 Model assessment for MNL 2 Maltese residents, post-reform

Model Assessment

| | Minimum | Maximum | Mean | Std. Deviation | N |
|---|---|---|---|---|---|
| Residuals | | | | | |
| Std. Residual | -1.28 | 3.36 | 0.00 | 1.00 | 395 |
| Stud. Residual | -1.29 | 3.40 | 0.00 | 1.00 | 395 |
| Influential cases | | | | | |
| DFFIT | -0.01 | 0.03 | 0.00 | 0.01 | 395 |
| DFBETA Intercept | -0.02 | 0.05 | 0.00 | 0.01 | 395 |
| DFBETA OCC | -0.01 | 0.00 | 0.00 | 0.00 | 395 |
| DFBETA DD | -0.01 | 0.00 | 0.00 | 0.00 | 395 |
| Cook's Distance | 0.00 | 0.07 | 0.00 | 0.01 | 395 |
| Centered Leverage | 0.00 | 0.02 | 0.01 | 0.01 | 395 |

MNL 2 was assessed for residual and influential cases. Table 8.11 shows the criteria used to assess model MNL 2. In the case of the standardized and studentized residuals, less than 1% of the cases had maximum values of 3.44, which as discussed in Chapter 5, sub-section 5.6.1, is not of concern for the model. Regarding the influential cases (Table 8.11), DFBeta and Cook's Distance were all less than 1, and the leverage statistics were close to 0; these statistics indicate that the model has a good fit.

Table 8.12 MNL 2 Maltese residents, post-reform

Reference category = Car

| Mode Use | | B | Std. Error | Sig. | Exp(B) |
|---|---|---|---|---|---|
| Bus | Intercept | -1.22 | 0.39 | 0.00 | |
| | [DD=Northern Harbour] = 0 | | | | |
| | [DD=Gozo&Comino] | -1.74 | 0.50 | 0.00 | 0.18 |
| | [DD=Western] | -0.67 | 0.46 | 0.15 | 0.51 |
| | [DD=South Eastern] | -2.09 | 0.55 | 0.00 | 0.12 |
| | [DD=Northern] | -1.94 | 0.38 | 0.00 | 0.14 |
| | [DD=Southern Harbour] | -0.89 | 0.24 | 0.00 | 0.41 |
| | [OCC=Professional] = 0 | | | | |
| | [OCC=Unemployed] | 1.24 | 0.60 | 0.04 | 3.45 |
| | [OCC=Elementary Occupation] | 1.32 | 0.62 | 0.03 | 3.76 |
| | [OCC=Student] | 2.26 | 0.52 | 0.00 | 9.56 |
| | [OCC=Housekeeper] | 1.54 | 0.41 | 0.00 | 4.64 |
| | [OCC=Retired] | 1.57 | 0.42 | 0.00 | 4.80 |
| | [OCC=Service Worker] | 0.14 | 0.48 | 0.77 | 1.15 |
| Other | Intercept | -22.75 | 4406.71 | 1.00 | |
| | [DD=Northern Harbour] = 0 | | | | |
| | [DD=Gozo&Comino] | 2.32 | 10.90 | 0.03 | 10.21 |
| | [DD=Western] | 2.60 | 1.08 | 0.02 | 13.42 |
| | [DD=South Eastern] | 1.27 | 1.22 | 0.30 | 3.56 |
| | [DD=Northern] | 0.58 | 1.21 | 0.63 | 1.79 |
| | [DD=Southern Harbour] | 1.84 | 0.94 | 0.05 | 6.27 |
| | [OCC=Professional] = 0 | | | | |
| | [OCC=Unemployed] | 19.32 | 4406.71 | 1.00 | 244895887.58 |
| | [OCC=Elementary Occupation] | 0.46 | 0.001 | | 1.59 |
| | [OCC=Student] | 0.52 | 8445.55 | 1.00 | 1.68 |
| | [OCC=Housekeeper] | 18.46 | 4406.71 | 1.00 | 104279086.80 |
| | [OCC=Retired] | 19.10 | 4406.71 | 1.00 | 198023374.42 |
| | [OCC=Service Worker] | 17.29 | 4406.71 | 1.00 | 32186095.22 |

Initial -2 log likelihood (199.9)

Model improvement (116.5*)

*significant for p-value of 0.05

Pseudo R-Square: Nagelkerke 24%

N = 398

The model MNL2, in Table 8.12, shows that post reform, all else being equal, a Maltese resident car user who travelled to the Northern Harbour District and who was a professional was 1.22 times less likely to use the bus. Regarding district destination, compared to professionals, all other destinations were less likely to be reached by means of the bus. Only the Western District was not statistically significant (p-value > 0.05). Participants whose district destination was the South Eastern (-2.09), followed by the Northern District (-1.94), Gozo and Comino (-1.74), and the Southern Harbour district (-0.89) were less likely to use the bus. It seems that the reform has negatively influenced the opportunity to reach destinations using the bus.

Regarding occupation, compared to professionals, all other occupations except service workers (p-value > 0.05) were more likely to use the bus. Students were 2.26 times more likely than were professionals to use the bus post-reform, followed by retired persons (1.57 times more likely to use the bus than professionals) (Table 8.12). Furthermore, housekeepers (1.54), people who had elementary occupations (1.32), and unemployed (1.24) were also more likely to use the bus than professionals.

After the reform, active travel (as in the 'other' modes of transport) became 22.75 times less likely to be selected by professionals who were car users, and who travelled to the Northern Harbour District (Table 8.12). Participants were more likely to use 'other' modes to travel to the Western district (2.60), and to Gozo & Comino (2.32) than car users.

Two possible reasons can be inferred regarding the elderly and the likelihood of their bus use post-reform. The first is that the fare structure in the Arriva service was cheap for the elderly; the cost of a day ticket with unlimited use was €0.50, and the cost of a 7-day ticket with unlimited use was €2.30 (Ministry of Infrastructure Transport and Communications 2011). The second inference is that probably, retired persons had few time constraints; hence, they used the bus because the time-related issues mentioned in Chapters 6 and 7 did not affect them.

### 8.5.3 MNL – Maltese residents, combined and interactions model

An interactions model (MNL3) was applied to identify significant interactions between the combined model (MNL3). The combined model was necessary to identify any significant impacts caused by the reform. The model in MNL3 shows the combined model and the interactions model (Table 8.15).

A Pearson correlation determined that mode use was associated with reform, occupation, and fare. These results were statistically significant (Table 8.13).

Table 8.13 Pearson correlation of mode use with reform, occupation and fare – Maltese residents, Pre-& Post-reform combined

| | Pearson Correlations |
|---|---|
| Reform | .248** |
| Occupation | -.160** |
| Fare | .093* |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The level of influence between mode use with ‘reform’, ‘occupation’, and ‘fare’ were tested using Chi-Square tests. Results were statistically significant at the 95% confidence interval. For reform $X^2$ = 66.8, p = 0.001, and for occupation $X^2$ = 81.9, p = 0.001, and fare $X^2$ = 27.0, p = 0.001. The relationships of ‘reform’ and ‘occupation’ with ‘mode use’ were strong while the relationship between ‘mode use’ and ‘fare’ was relatively weak. Relevant cross tabulations are available in Appendix J, Tables J.5 to J.7.

The reference categories for the factors in the model are as follows: ‘mode use’ – car, ‘reform’ – pre, ‘occupation’ – professional, and ‘fare’ – best. The AIC and -2LL criteria had improved values in the final model (Table 8.14). These low values indicate a good fit of the model MNL 3 in Table 8.15.

Table 8.14 Model Fitting Information – MNL 3 Maltese residents, Combined and Interactions Model

Model Fitting Information

| Model | Model Fitting Criteria | | | Likelihood Ratio Tests | | |
|---|---|---|---|---|---|---|
| | AIC | BIC | -2 Log Likelihood | Chi-Square | df | Sig. |
| Intercept Only | 459.745 | 468.878 | 455.745 | | | |
| Final | 337.702 | 538.635 | 249.702 | 206.044 | 42 | 0.0001 |

For MNL 3 (Table 8.15) Reform * OCC * Fare, all else being equal, a Maltese resident car user who was a professional, pre-reform, who rated 'fare' as 'best' was 1.55 times less likely to use the bus (Table 8.15). Post-reform, student and unemployed were 3.97 times, and 2.68 times more likely to use the bus, respectively, when compared with professional (Table 8.15). Service worker, retired, and housekeeper were 1.84 times, 1.72 times, and 1.55 times more likely to use the bus, respectively, when compared with professional (Table 8.15). MNL 3 shows that post-reform, bus users who rated 'fare' as 'nearly the worst', 'unsure', and 'nearly the best', were 1.81 times, 1.21 times, and 1.12 times less likely to use the bus when compared with those bus users who rated 'fare' as 'best' (Table 8.15).

MNL 3 produced two interactions, Reform * OCC, and Reform * Fare (Table 8.15). The interactions between 'post-reform' and 'fare' show that bus users who rated it as 'worst', 'nearly the worst', and 'nearly the best' were 3 times, 2.56 times, and 0.92 times more likely to use the bus, respectively, when compared with post-reform bus users who rated 'fare' as 'best' (Table 8.15). The result for those bus users who rated 'fare' as the 'worst' and 'nearly the worst', but still used the service, imply that these were captive bus users. The results for the interaction Reform * OCC were not statistically significant ($p > 0.05$), hence no further discussion can be done regarding bus use.

Regarding 'other' mode use (Table 8.15), all else being equal, a Maltese resident car user who was a professional, pre-reform, who rated 'fare' as 'best' was 1.60 times less likely to use other modes (Table 8.15). After the reform, students (2.17), unemployed (1.95), retired (1.75), housekeepers (1.34), service workers (1.065), and elementary occupations (1.21) were more likely to use other modes than professionals (Table 8.15).

Table 8.15 MNL 3 Maltese residents, combined and interactions model

Reference category = Car

| Mode Use | | B | Std. Error | Sig. |
|---|---|---|---|---|
| Bus | Intercept | -1.55 | 0.53 | 0.00 |
| | [Reform=Pre] = 0 | | | |
| | [Reform=Post] | -0.20 | 0.71 | 0.78 |
| | [Fare=Best] = 0 | | | |
| | [Fare=Worst] | -1.94 | 1.23 | 0.12 |
| | [Fare=Nearly the Worst] | -1.81 | 0.70 | 0.01 |
| | [Fare=Unsure] | -1.21 | 0.37 | .001 |
| | [Fare=Nearly the Best] | -1.12 | 0.31 | 0.0002 |
| | [OCC=Professional] = 0 | | | |
| | [OCC=Unemployed] | 2.68 | 0.73 | 0.0003 |
| | [OCC=Elementary Occupation] | 0.95 | 0.68 | 0.16 |
| | [OCC=Student] | 3.97 | 0.70 | 0.0001 |
| | [OCC=Housekeeper] | 1.55 | 0.58 | 0.01 |
| | [OCC=Retired] | 1.72 | 0.64 | 0.01 |
| | [OCC=Service Worker] | 1.84 | 0.58 | .002 |
| | [Reform=Pre] * [Fare=Worst] = 0 | | | |
| | [Reform=Pre] * [Fare=Nearly the Worst] = 0 | | | |
| | [Reform=Pre] * [Fare=Unsure] = 0 | | | |
| | [Reform=Pre] * [Fare=Nearly the Best] = 0 | | | |
| | [Reform=Pre] * [Fare=Best] = 0 | | | |
| | [Reform=Post] * [Fare=Best] = 0 | | | |
| | [Reform=Post] * [Fare=Worst] | 3.00 | 1.44 | 0.04 |
| | [Reform=Post] * [Fare=Nearly the Worst] | 2.56 | 0.85 | .002 |
| | [Reform=Post] * [Fare=Unsure] | 0.87 | 0.55 | 0.12 |
| | [Reform=Post] * [Fare=Nearly the Best] | 0.92 | 0.46 | 0.05 |
| | [Reform=Pre] * [OCC=Unemployed] = 0 | | | |
| | [Reform=Pre] * [OCC=Elementary Occupation] = 0 | | | |
| | [Reform=Pre] * [OCC=Student] = 0 | | | |
| | [Reform=Pre] * [OCC=Housekeeper] = 0 | | | |
| | [Reform=Pre] * [OCC=Retired] = 0 | | | |
| | [Reform=Pre] * [OCC=Service Worker] = 0 | | | |
| | [Reform=Pre] * [OCC=Professional] = 0 | | | |
| | [Reform=Post] * [OCC=Professional] = 0 | | | |
| | [Reform=Post] * [OCC=Unemployed] | -1.56 | 1.03 | 0.13 |
| | [Reform=Post] * [OCC=Elementary Occupation] | 0.78 | 0.84 | 0.36 |
| | [Reform=Post] * [OCC=Student] | -1.67 | 0.95 | 0.08 |
| | [Reform=Post] * [OCC=Housekeeper] | -0.50 | 0.91 | 0.58 |
| | [Reform=Post] * [OCC=Retired] | -0.20 | 0.81 | 0.80 |
| | [Reform=Post] * [OCC=Service Worker] | -1.48 | 0.81 | 0.07 |

P.T.O. to continue MNL3

…contd. MNL3

Reference category = Car

| Mode Use | | B | Std. Error | Sig. |
|---|---|---|---|---|
| Other | Intercept | -1.60 | 0.49 | .001 |
| | [Reform=Pre] = 0 | | | |
| | [Reform=Post] | -18.80 | 6077.11 | 1.00 |
| | [Fare=Best] = 0 | | | |
| | [Fare=Worst] | -1.21 | 1.12 | 0.28 |
| | [Fare=Nearly the Worst] | -2.23 | 1.05 | 0.03 |
| | [Fare=Unsure] | -0.66 | 0.37 | 0.08 |
| | [Fare=Nearly the Best] | -0.47 | 0.30 | 0.12 |
| | [OCC=Professional] = 0 | | | |
| | [OCC=Unemployed] | 1.95 | 0.73 | 0.01 |
| | [OCC=Elementary Occupation] | 1.21 | 0.59 | 0.04 |
| | [OCC=Student] | 2.17 | 0.75 | 0.004 |
| | [OCC=Housekeeper] | 1.34 | 0.53 | 0.01 |
| | [OCC=Retired] | 1.751 | .581 | .003 |
| | [OCC=Service Worker] | 1.065 | .556 | .055 |
| | [Reform=Pre] * [Fare=Worst] = 0 | | | |
| | [Reform=Pre] * [Fare=Nearly the Worst] = 0 | | | |
| | [Reform=Pre] * [Fare=Unsure] = 0 | | | |
| | [Reform=Pre] * [Fare=Nearly the Best] = 0 | | | |
| | [Reform=Pre] * [Fare=Best] = 0 | | | |
| | [Reform=Post] * [Fare=Best] = 0 | | | |
| | [Reform=Post] * [Fare=Worst] | -16.03 | 0.0001 | |
| | [Reform=Post] * [Fare=Nearly the Worst] | -15.07 | 7303.52 | 1.00 |
| | [Reform=Post] * [Fare=Unsure] | -17.13 | 5945.30 | 1.00 |
| | [Reform=Post] * [Fare=Nearly the Best] | -0.12 | 1.13 | 0.92 |
| | [Reform=Pre] * [OCC=Unemployed] = 0 | | | |
| | [Reform=Pre] * [OCC=Elementary Occupation] = 0 | | | |
| | [Reform=Pre] * [OCC=Student] = 0 | | | |
| | [Reform=Pre] * [OCC=Housekeeper] = 0 | | | |
| | [Reform=Pre] * [OCC=Retired] = 0 | | | |
| | [Reform=Pre] * [OCC=Service Worker] = 0 | | | |
| | [Reform=Pre] * [OCC=Professional] = 0 | | | |
| | [Reform=Post] * [OCC=Professional] = 0 | | | |
| | [Reform=Post] * [OCC=Unemployed] | 16.78 | 6077.11 | 1.00 |
| | [Reform=Post] * [OCC=Elementary Occupation] | 16.29 | 6077.11 | 1.00 |
| | [Reform=Post] * [OCC=Student] | -1.50 | 10713.47 | 1.00 |
| | [Reform=Post] * [OCC=Housekeeper] | -0.94 | 11242.93 | 1.00 |
| | [Reform=Post] * [OCC=Retired] | 16.23 | 6077.11 | 1.00 |
| | [Reform=Post] * [OCC=Service Worker] | 16.39 | 6077.11 | 1.00 |

Initial -2 log likelihood (455.74)

Model improvement (249.70**)

** significant for p-value of 0.05

N = 788

The results infer that after the reform, despite the Government's aim to have professionals shift to car use, professional car users were still the most likely population group to continue using their car. Furthermore, students and unemployed persons were most likely to engage in bus use, but also in 'other' mode use.

## 8.6 MNL for Tourists

### 8.6.1 MNL – Tourists, pre-reform

A Pearson correlation was performed between mode use and the independent variables that could potentially influence bus use for tourists (Table 8.4). 'Accommodation' was the only statistically significant variable, with a p-value of 0.01. The relationship between mode use and accommodation was weak ($r$ = -0.157).

A Chi-Square test was subsequently performed to identify the level of influence between mode use and accommodation. The result was statistically significant at the 95% confidence interval ($X^2$ = 48.17, p = 0.001). The relevant cross tabulation is available in Appendix J Table J.8.

The model structure for MNL 4 is illustrated in Figure 8.4. Before the reform, tourists were potentially influenced by opportunity to use the bus.


Figure 8.4 Model structure – MNL 4 Tourists, Pre-Reform

The reference category for mode use was hired car, and for accommodation, the reference category was 3-star hotel. The values of the AIC and -2LL criteria improved in the final model, indicating a good fit of the model MNL 4 (Table 8.16).

Table 8.16 Model Fitting Information – MNL 4 Tourists, Pre-Reform

Model Fitting Information

| Model | Model Fitting Criteria AIC | BIC | -2 Log Likelihood | Likelihood Ratio Tests Chi-Square | df | Sig. |
|---|---|---|---|---|---|---|
| Intercept Only | 123.23 | 135.19 | 117.23 | | | |
| Final | 99.28 | 171.08 | 63.28 | 53.94 | 15 | .001 |

MNL 4 was assessed for residual and influential cases, shown in Table 8.17. The maximum score for the residuals was 3.21 (standardized) and 3.22 (studentized). Only 1% of each of the residuals had these values, which is not of concern for the model. The DFBeta and Cook's Distance were all less than 1, and the leverage statistics were 0. Thus, MNL 4 has a good fit.

Table 8.17 Model assessment for MNL 4 Tourists, pre-reform

Model Assessment

| | Minimum | Maximum | Mean | Std. Deviation | N |
|---|---|---|---|---|---|
| Residuals | | | | | |
| Std. Residual | -1.96 | 3.21 | 0.00 | 1.00 | 399 |
| Stud. Residual | -1.97 | 3.22 | 0.00 | 1.00 | 399 |
| Influential cases | | | | | |
| DFFIT | -0.05 | 0.07 | 0.00 | 0.01 | 399 |
| DFBETA Intercept | -0.07 | 0.09 | 0.00 | 0.02 | 399 |
| DFBETA Accomm | -0.01 | 0.01 | 0.00 | 0.00 | 399 |
| Cook's Distance | 0.00 | 0.05 | 0.00 | 0.01 | 399 |
| Centered Leverage Value | 0.00 | 0.01 | 0.00 | 0.00 | 399 |

MNL 4 (Table 8.18) shows that all else being equal, pre-reform tourists who were hired car users and who stayed in a 3-star hotel were 1.003 times more likely to use the bus. Compared to this group, tourists who stayed in guesthouses were 1.08 times more likely to use the bus before the reform. Tourists staying in 5-star hotels were 0.96 times less likely to use the bus compared to tourists staying in 3-star hotels. This finding suggest that based on the results interpreted from 'accommodation', tourists who prefer to spend less before the reform tended to use the bus.

Table 8.18 MNL4 Tourists, pre-reform

Reference category = Hired Car

| Mode Use | | B | Std. Error | Sig. | Exp(B) |
|---|---|---|---|---|---|
| Buses | Intercept | 1.003 | 0.25 | .001 | |
| | [Accomm=3 Star Hotel] = 0 | | | | |
| | [Accomm=Other] | -0.58 | 0.39 | 0.13 | 0.56 |
| | [Accomm=Host Family] | 0.87 | 0.59 | 0.14 | 2.38 |
| | [Accomm=Guest House] | 1.08 | 0.59 | 0.07 | 2.93 |
| | [Accomm=5 Star Hotel] | -0.96 | 0.38 | 0.01 | 0.38 |
| | [Accomm=4 Star Hotel] | -0.24 | 0.36 | 0.50 | 0.78 |
| Private Coaches | Intercept | -0.89 | 0.40 | 0.02 | |
| | [Accomm=3 Star Hotel] = 0 | | | | |
| | [Accomm=Other] | -0.66 | 0.68 | 0.33 | 0.51 |
| | [Accomm=Host Family] | 0.89 | 0.81 | 0.27 | 2.44 |
| | [Accomm=Guest House] | 1.12 | 0.78 | 0.15 | 3.06 |
| | [Accomm=5 Star Hotel] | 0.61 | 0.50 | 0.23 | 1.83 |
| | [Accomm=4 Star Hotel] | 0.85 | 0.50 | 0.09 | 2.33 |
| Other | Intercept | -1.48 | 0.46 | 0.00 | |
| | [Accomm=3 Star Hotel] = 0 | | | | |
| | [Accomm=Other] | 0.62 | 0.65 | 0.34 | 1.85 |
| | [Accomm=Host Family] | 1.19 | 0.91 | 0.19 | 3.30 |
| | [Accomm=Guest House] | 1.48 | 0.86 | 0.09 | 4.40 |
| | [Accomm=5 Star Hotel] | -0.31 | 0.73 | 0.67 | 0.73 |
| | [Accomm=4 Star Hotel] | -20.98 | 0.001 | | 7.727E-10 |

Initial -2 log likelihood (117.23)
Model improvement (63.28*)
*significant for p-value of 0.05
N = 400

### 8.6.2 MNL – Tourists, post-reform

A Pearson correlation determined that post-reform, mode use was associated with age, fare, length of stay, and accommodation. The associations between mode use and each of the mentioned variables were statistically significant, as indicated in Table 8.19. These associations, however, were weak (Table 8.19).

Table 8.19 Pearson correlation of mode use with age, fare, length of stay and accommodation – Tourists, Post-reform

| | Pearson Correlation |
|---|---|
| Age | 0.165** |
| Fare | -0.129* |
| Length of Stay | 0.120* |
| Accommodation | -0.103* |

**. Correlation is significant at the 0.01 level (2-tailed)
*. Correlation is significant at the 0.05 level (2-tailed)

The level of influence between mode use and the variables listed in Table 8. was tested using Chi-Square tests. The results for the $X^2$ were statistically significant (Table 8.). The $X^2$ test result for 'fare' was marginally significant (Table 8.), but it was still included for further analysis in the MNL. The cross tabulations for the $X^2$ tests are available in Appendix J Tables J.9 to J.12.

Table 8.20 Chi-square tests for mode use with age, fare, length of stay, and accommodation – Tourists, Post-reform

| | Chi Square Tests | df | (2-sided)* |
|---|---|---|---|
| Age | 65.94 | 15 | 0.001 |
| Fare | 20.6 | 12 | 0.05 |
| Length of Stay | 41.9 | 12 | 0.001 |
| Accommodation | 83.84 | 15 | 0.001 |

*Significant at the 0.05 level (2-tailed)

The model structure for MNL 5, tourists post-reform (Figure 8.5), shows that the reform might have influenced capability and opportunity to use the bus. As illustrated in Figure 8.1, the variable used to measure capability is 'age'. Opportunity is measured by service quality, in this case, 'fare', 'length of stay', and 'accommodation'.

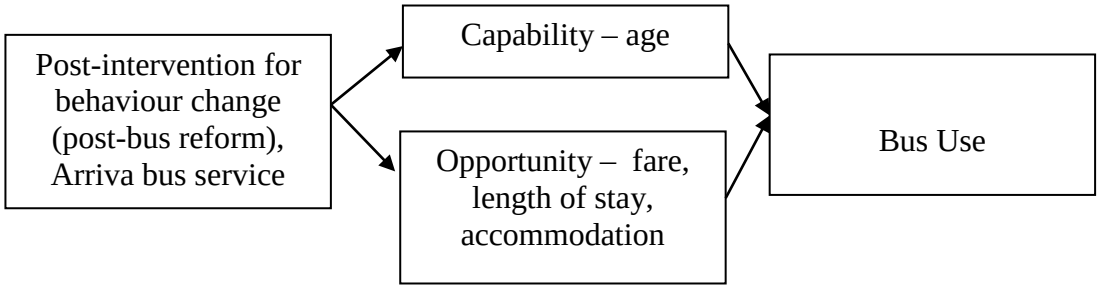


Figure 8.5 Model structure – MNL 5 Tourists, Post-Reform

The reference categories for the factors in the model are as follows: 'mode use' – hired car, 'age' – 41-50, 'fare' – best, 'length of stay' – 4-7 nights, and 'accommodation' – 3-star hotel. The AIC and -2LL criteria had improved values in the final model (Table 8.21). MNL 5 is illustrated in (Table 8.23).

Table 8.21 Model Fitting Information – MNL 5 Tourists, Post-Reform

Model Fitting Information

| | Model Fitting Criteria | | | Likelihood Ratio Tests | | |
|---|---|---|---|---|---|---|
| Model | AIC | BIC | -2 Log Likelihood | Chi-Square | df | Sig. |
| Intercept Only | 302.11 | 314.06 | 296.11 | | | |
| Final | 241.06 | 372.53 | 175.06 | 121.05 | 30 | .001 |

MNL 5 was assessed for residual and influential cases. Table 8. shows the criteria used to assess model MNL 5. The resultant values of the standardized and studentized residuals were not of concern for the model (Table 8.22). Regarding the influential cases (Table 8.22), DFBeta and Cook's Distance were less than 1, and the leverage statistics were close to 0. These statistics indicate that the model has a good fit.

Table 8.22 Model assessment for MNL 5 Tourists, post-reform

Residuals Statistics

| | Minimum | Maximum | Mean | Deviation | N |
|---|---|---|---|---|---|
| Residuals | | | | | |
| Std. Residual | -2.35 | 2.70 | 0.00 | .997 | 397 |
| Stud. Residual | -2.36 | 2.71 | 0.00 | 1.001 | 397 |
| Influential cases | | | | | |
| DFFIT | -0.02 | 0.03 | 0.00 | 0.006 | 397 |
| DFBETA Intercept | -0.02 | 0.03 | 0.00 | 0.005 | 397 |
| DFBETA A | 0.00 | 0.00 | 0.00 | 0.001 | 397 |
| DFBETA Accomm | 0.00 | 0.00 | 0.00 | 0.001 | 397 |
| Cook's Distance | .000 | 0.03 | 0.00 | .005 | 397 |
| Centered Leverage Value | .000 | 0.02 | 0.01 | .004 | 397 |

MNL 5 (Table 8.23) shows that post-reform, all else being equal, tourist hired car users who stayed in a 3-star hotel and who were between 41 and 50 years old were 1.529 times more likely to use the bus. Compared to tourists staying in a 3-star hotel, tourists staying in other accommodation were 1.48 times less likely to use the bus. Other accommodation included locations such as the house of friends. If the friends had a car, there was the possibility that the tourists would get a lift. The model MNL 5 shows that opportunity for tourists post-reform did not influence bus use.

Table 8.23 MNL 5 Tourists, post-reform

Reference category = Car

| Mode Use | | B | Std. Error | Sig. | Exp(B) |
|---|---|---|---|---|---|
| Private Coaches | Intercept | -19.36 | 4865.20 | 1.00 | |
| | [Accomm=3 Star Hotel] = 0 | | | | |
| | [Accomm=Other] | 0.00 | 1.38 | 1.00 | .996 |
| | [Accomm=Host Family] | 2.26 | 1.83 | 0.22 | 9.541 |
| | [Accomm=Guest House] | -16.60 | 0.001 | | 6.147E-08 |
| | [Accomm=5 Star Hotel] | -0.70 | 1.51 | 0.64 | .497 |
| | [Accomm=4 Star Hotel] | -15.50 | 1723.95 | 0.99 | 1.846E-07 |
| | [A=41-50] = 0 | | | | |
| | [A=11-20] | 18.860 | 4865.20 | 1.00 | 155214987.26 |
| | [A=21-30] | 16.761 | 4865.20 | 1.00 | 19024957.96 |
| | [A=31-40] | .401 | 6187.53 | 1.00 | 1.49 |
| | [A=51-60] | 19.238 | 4865.20 | 1.00 | 226498393.47 |
| | [A=60+] | 1.126 | 7669.61 | 1.00 | 3.08 |
| Buses | Intercept | 1.529 | 0.51 | .003 | |
| | [Accomm=3 Star Hotel] = 0 | | | | |
| | [Accomm=Other] | -1.48 | 0.50 | 0.003 | 0.23 |
| | [Accomm=Host Family] | 0.42 | 1.21 | 0.73 | 1.52 |
| | [Accomm=Guest House] | -0.69 | 1.25 | 0.58 | 0.50 |
| | [Accomm=5 Star Hotel] | -2.70 | 0.56 | 1.75624E-06 | 0.07 |
| | [Accomm=4 Star Hotel] | -0.72 | 0.51 | 0.16 | 0.49 |
| | [A=41-50] = 0 | | | | |
| | [A=11-20] | 2.05 | 0.68 | 0.003 | 7.78 |
| | [A=21-30] | 1.23 | 0.46 | 0.01 | 3.43 |
| | [A=31-40] | 0.14 | 0.46 | 0.76 | 1.15 |
| | [A=51-60] | 0.39 | 0.62 | 0.53 | 1.48 |
| | [A=60+] | 1.43 | 0.65 | 0.03 | 4.16 |
| Other | Intercept | -.927 | 0.81 | .250 | |
| | [Accomm=3 Star Hotel] = 0 | | | | |
| | [Accomm=Other] | -0.45 | 0.69 | 0.51 | 0.64 |
| | [Accomm=Host Family] | 0.90 | 1.42 | 0.53 | 2.46 |
| | [Accomm=Guest House] | 1.30 | 1.37 | 0.34 | 3.65 |
| | [Accomm=5 Star Hotel] | -1.78 | 0.85 | 0.04 | 0.17 |
| | [Accomm=4 Star Hotel] | -1.07 | 0.80 | 0.18 | 0.34 |
| | [A=41-50] = 0 | | | | |
| | [A=11-20] | 1.31 | 0.99 | 0.19 | 3.69 |
| | [A=21-30] | 1.15 | 0.74 | 0.12 | 3.15 |
| | [A=31-40] | 0.22 | 0.82 | 0.79 | 1.25 |
| | [A=51-60] | 1.62 | 0.86 | 0.06 | 5.05 |
| | [A=60+] | 1.12 | 1.10 | 0.31 | 3.07 |

Initial -2 log likelihood (296.11)

Model improvement (175.06*)

*significant for p-value of 0.05

Pseudo R-Square: Nagelkerke 32%

N = 399

The reform seemed to influence the tourists' capability to use the bus. Compared to the 41-50 age group, the 11-20 age group was more likely to use the bus. The 60+ age group was 1.43 times more likely, and the 21-30 age group was 1.23 times more likely to use the bus than the 41-50 age group. After the reform, the young, young adults, and the elderly were more likely to use the bus than were the 41-50 age group.

### 8.6.3 MNL – Tourists, combined and interactions model

An interactions model (MNL6) was applied to identify significant interactions between the combined model (MNL6). The combined model was necessary to identify any significant impacts caused by the reform.

A Pearson correlation between mode use and the potential independent variables indicated significant associations with reform and accommodation (Table 8.24). Chi-square tests were performed to identify the level of influence between 'mode use' and 'reform', and 'mode use' and 'accommodation'. Results were statistically significant at the 95% confidence interval. For reform, $X^2 = 48.61$, p = 0.001, and for accommodation, $X^2 = 99.05$, p = 0.001. The relationship between mode use and the two independent variables was strong. The relevant cross-tabulations are available in Appendix J, Tables J.13 and J.14.

Table 8.24 Pearson correlation of mode use with reform and accommodation – Tourists, Pre- & Post-reform combined

| | Pearson Correlations |
|---|---|
| Reform | -0.14** |
| Accommodation | -0.129** |

**. Correlation is significant at the 0.01 level (2-tailed)

The model structure for MNL 6 suggests that in the combined model, opportunity influences bus use (Figure 8.6). The reference categories for the factors in the model are as follows, 'reform' – pre, and 'accommodation' – 3-star hotel. The AIC and -2LL criteria had improved values in the final model (Table 8.25). These low values indicate a good fit of the model MNL 6 (Table 8.26).


Figure 8.6 Model structure – MNL 6 Tourists, combined model

Table 8.25 Model Fitting Information – MNL 6 Tourists, Combined and Interactions Model

Model Fitting Information

| | Model Fitting Criteria | | | Likelihood Ratio Tests | | |
|---|---|---|---|---|---|---|
| Model | AIC | BIC | -2 Log Likelihood | Chi-Square | df | Sig. |
| Intercept Only | 307.719 | 321.765 | 301.719 | | | |
| Final | 187.195 | 355.751 | 115.195 | 186.524 | 33 | .000 |

MNL 6 (Table 8.26) shows that all else being equal, pre-reform, hired car users staying in a 3-star hotel were 1.00 times more likely to use the bus. Post-reform bus users were 1.31 times more likely to use the bus than hired car users, and tourists staying in 5 star hotels were 0.96 times less likely to use the bus (Table 8.26). The interactions in MNL 6 show that post-reform tourists staying in a 5 star hotel were 1.91 times less likely to use the bus when compared with those staying in a 3 star hotel. The rest of the results were not statistically significant ($p > 0.05$), hence the results were not interpreted further.

Table 8.26 MNL 6, Tourists, combined and interactions model

Reference category = Hired Car

| Mode Use | | B | Std. Error | Sig. |
|---|---|---|---|---|
| Private Coach | Intercept | -0.89 | 0.40 | 0.02 |
| | [Reform=Pre] = 0 | | | |
| | [Reform=Post] | -1.19 | 1.13 | 0.29 |
| | [Accomm=3 Star Hotel] = 0 | | | |
| | [Accomm=Other] | -0.66 | 0.68 | 0.33 |
| | [Accomm=Host Family] | 0.89 | 0.81 | 0.27 |
| | [Accomm=Guest House] | 1.12 | 0.78 | 0.15 |
| | [Accomm=5 Star Hotel] | 0.61 | 0.50 | 0.23 |
| | [Accomm=4 Star Hotel] | 0.85 | 0.50 | 0.09 |
| | [Reform=Pre] * [Accomm=Other] = 0 | | | |
| | [Reform=Pre] * [Accomm=Host Family] = 0 | | | |
| | [Reform=Pre] * [Accomm=Guest House] = 0 | | | |
| | [Reform=Pre] * [Accomm=5 Star Hotel] = 0 | | | |
| | [Reform=Pre] * [Accomm=4 Star Hotel] = 0 | | | |
| | [Reform=Pre] * [Accomm=3 Star Hotel] = 0 | | | |
| | [Reform=Post] * [Accomm=3 Star Hotel] = 0 | | | |
| | [Reform=Post] * [Accomm=Other] | 0.71 | 1.40 | 0.61 |
| | [Reform=Post] * [Accomm=Host Family] | 2.28 | 1.76 | 0.20 |
| | [Reform=Post] * [Accomm=Guest House] | -18.23 | 0.0001 | |
| | [Reform=Post] * [Accomm=5 Star Hotel] | -1.17 | 1.38 | 0.40 |
| | [Reform=Post] * [Accomm=4 Star Hotel] | -17.55 | 2828.74 | 1.00 |
| Buses | Intercept | 1.00 | 0.25 | .001 |
| | [Reform=Pre] = 0 | | | |
| | [Reform=Post] | 1.31 | 0.45 | .003 |
| | [Accomm=3 Star Hotel] = 0 | | | |
| | [Accomm=Other] | -0.58 | 0.39 | 0.13 |
| | [Accomm=Host Family] | 0.87 | 0.59 | 0.14 |
| | [Accomm=Guest House] | 1.08 | 0.59 | 0.07 |
| | [Accomm=5 Star Hotel] | -0.96 | 0.38 | 0.01 |
| | [Accomm=4 Star Hotel] | -0.24 | 0.36 | 0.50 |
| | [Reform=Pre] * [Accomm=Other] = 0 | | | |
| | [Reform=Pre] * [Accomm=Host Family] = 0 | | | |
| | [Reform=Pre] * [Accomm=Guest House] = 0 | | | |
| | [Reform=Pre] * [Accomm=5 Star Hotel] = 0 | | | |
| | [Reform=Pre] * [Accomm=4 Star Hotel] = 0 | | | |
| | [Reform=Pre] * [Accomm=3 Star Hotel] = 0 | | | |
| | [Reform=Post] * [Accomm=3 Star Hotel] = 0 | | | |
| | [Reform=Post] * [Accomm=Other] | -0.79 | 0.59 | 0.18 |
| | [Reform=Post] * [Accomm=Host Family] | 0.31 | 1.23 | 0.80 |
| | [Reform=Post] * [Accomm=Guest House] | -1.31 | 1.27 | 0.30 |
| | [Reform=Post] * [Accomm=5 Star Hotel] | -1.91 | 0.62 | .002 |
| | [Reform=Post] * [Accomm=4 Star Hotel] | -0.60 | 0.58 | 0.30 |

P.T.O. to continue MNL6

…contd. MNL6

Reference category = Hired Car

| Mode Use | | B | Std. Error | Sig. |
|---|---|---|---|---|
| Other | Intercept | -1.48 | 0.50 | .003 |
| | [Reform=Pre] = 0 | | | |
| | [Reform=Post] | 1.35 | 0.72 | 0.06 |
| | [Accomm=3 Star Hotel] = 0 | | | |
| | [Accomm=Other] | 0.62 | 0.65 | 0.34 |
| | [Accomm=Host Family] | 1.19 | 0.91 | 0.19 |
| | [Accomm=Guest House] | 1.48 | 0.86 | 0.09 |
| | [Accomm=5 Star Hotel] | -0.31 | 0.73 | 0.67 |
| | [Accomm=4 Star Hotel] | -17.99 | 3598.01 | 1.00 |
| | [Reform=Pre] * [Accomm=Other] = 0 | | | |
| | [Reform=Pre] * [Accomm=Host Family] = 0 | | | |
| | [Reform=Pre] * [Accomm=Guest House] = 0 | | | |
| | [Reform=Pre] * [Accomm=5 Star Hotel] = 0 | | | |
| | [Reform=Pre] * [Accomm=4 Star Hotel] = 0 | | | |
| | [Reform=Pre] * [Accomm=3 Star Hotel] = 0 | | | |
| | [Reform=Post] * [Accomm=3 Star Hotel] = 0 | | | |
| | [Reform=Post] * [Accomm=Other] | -1.05 | 0.90 | 0.24 |
| | [Reform=Post] * [Accomm=Host Family] | 0.04 | 1.56 | 0.98 |
| | [Reform=Post] * [Accomm=Guest House] | 0.04 | 1.50 | 0.98 |
| | [Reform=Post] * [Accomm=5 Star Hotel] | -1.50 | 1.04 | 0.15 |
| | [Reform=Post] * [Accomm=4 Star Hotel] | 16.84 | 3598.01 | 1.00 |

Initial -2 log likelihood (301.72)

Model improvement (115.20**)

**significant for p-value of 0.05

N = 799

## 8.7 Summary of findings

After the bus reform, both population samples showed an increase in bus use. This was expected, because this was discussed in Chapter 6, sub-sections 6.1.1 and 6.1.2. Sub-section 8.3.1 indicates that for Maltese residents, this increase was slight (2%). Simultaneously, car users increased by 16% post-reform. Regarding tourists, sub-section 8.3.2 shows that bus use increased by 14%. Hired car users decreased by 4% post-reform.

The findings in this chapter indicate that opportunity in the conceptual model (Figure 8.1) was likely to influence bus use. The findings, however, indicated that opportunity was not directly influenced by ‘time’, as expected and discussed in section 8.2. This

finding was surprising, because most of the negative comments concerned aspects related to ‘time’.

Before the reform, the factors ‘fare’, ‘students’ and ‘unemployed Maltese residents’ determined bus use (MNL 1, Table 8.7). Post-reform, Maltese residents travelling to all districts, when compared to the Northern Harbour District, were less likely to use the bus (MNL 2, Table 8.12). This finding could be an indirect influence of the time-related issues, which would have possibly influenced accessibility. Surprisingly, the Southern Harbour District was also less likely to be accessed by bus compared to the Northern Harbour District. This district is also one of the densely populated districts in Malta (together with the Northern Harbour District) and caters for major employment nodes.

Compared to professionals, post-reform, Maltese resident students and the elderly were more likely to use the bus (MNL 2, Table 8.12). The interactions model for Maltese residents also indicated that after the reform, captive bus users were more likely to use the bus. These findings were expected, because these population groups tend to form part of the dependent groups in society. Hence, possibly, due to financial issues such groups have to rely on the bus service.

Out of six models, only in one instance, MNL 5 (Table 8.23) tourists post-reform, was capability a determining factor. Capability was measured by ‘age’. This finding is interesting, because it was not as expected and as discussed in section 8.1. It seems that capability was not influenced by physical abilities.

# Chapter 9 The Impact of Bus Reform on Social Norms

This chapter answers RQ4: *After the reform, what were the effects (of social norms) on attitudes, perceived confidence, and intention to use the bus?* Figure 9.1 shows the parts of the proposed conceptual model related to this research question. As explained in Chapter 5, sub-section 5.4.4, the interviewees' comments are analysed through discourse analysis.

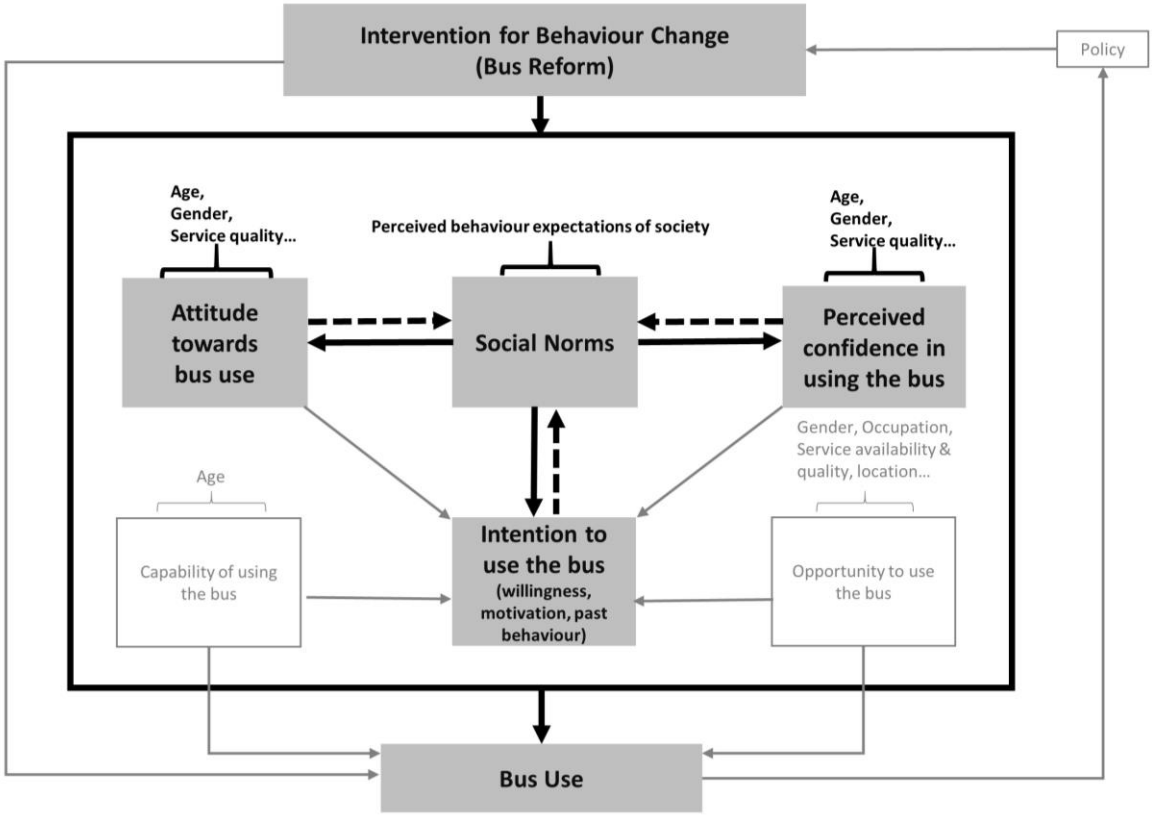


Figure 9.1 Components of the proposed model that relate to RQ 4

## 9.1 Social Norms

As discussed in Chapter 3, section 3.7, social norms are not easily measurable. This difficulty in measuring social norms is attributed to their subjectivity.

In this research, social norms are interpreted as what is normal practice. Normal practice refers to typical activities done by specific groups of society, such as car users or bus users. Individuals identify themselves with such groups in society, and follow what such groups normally do. Based on normal practice, individuals perform their behaviour according to what one ought to do (Chapter 3, sub-section 3.6.2).

As discussed in sub-section 3.6.2 (Chapter 3) expectations are indicators of social norms. Expectations expose what people think is the normal, socially approved, and most sensible behaviour to perform, because everyone performs that behaviour (Bamberg et al. 2003 and Bamberg & Schmidt 2003).

Social norms are analysed using discourse analysis through a Foucauldian approach (Chapter 2, sub-section 2.7.3 and Chapter 5, sub-section 5.6.2). The concept of 'power' in the Foucauldian philosophy is important in this research context, as the government had the power to implement the reform to instil a modal shift. This power to perform the change led to knowledge availability. Knowledge formed as a result of the reform and people's opinion about it. Hence, knowledge refers to people's thoughts about the reform. Such information could be extracted though semi-structured interviews. The interviewees' discourse is the object of analysis.

### 9.1.1 Discourse Analysis

Discourse reveals what people believe to be the truth based on the 'social, cultural and historical' context (Sharp & Richardson 2001). Hence, discourse analysis identifies the Maltese residents' and tourists' truth about the reform.

The interviewees' discourse was extracted through four tools for analysis (Chapter 5, Table 5.10).

1. The nodal points were identified through thematic analysis, which included unrestricted and pre-defined themes. Whenever the nodal points are mentioned in this chapter, they are highlighted in bold.

2. Another tool for analysis was the concept of identity. Through discourse, the concept of identity reveals social norms before the reform. Identity, both collective and individual, is part of the discursive process, which is an indication of social practice (Jorgensen & Phillips 2002). Identity is entirely social; it is formed through what is socially accepted or rejected through discourse (Jorgensen & Phillips 2002). Regarding tourists, the concept of identity was indicated by comparing the situation in Malta with that of their country.

3. The penultimate tool for analysis was discursive practice (Chapter 5, Table 5.10). Discursive practice reveals how the two types of stakeholders refer to the same text in different ways. Maltese residents referred to **bus** use as a mode of travel used when one has enough time to 'waste' – *"They (buses) are perfect to use when you have time to waste"* (L16). Tourists, however, refer to bus use as a means of travelling to improve the environment – *"I am using the bus…it's better for the environment"* (T6). When referring to the **PTA service**, some of the Maltese residents, particularly car users, were nostalgic – *"We were better when we were worse"* (L3), while bus users were happy that they had got rid of the PTA service, because *"savageries have ceased"* (L9). Tourists referred to the old service as *"funny…because I have very good memories about it; I think it was better"* (return tourist T3).

4. The final tool for analysis was text (Chapter 5, Table 5.10). Text is the part of discourse where interviewees use particular words that describe emphasis, or use a substitution for different words. They do this to show the extent to which the situation influences the individual or the society. For instance, regarding **traffic**, both Maltese residents and tourists exaggerated related words. Maltese residents said that traffic is *"frustrating"* (L4), *"It's a nightmare"* (L8), *"It's a big problem"* (L9), and *"It's terrible"* (L13). Tourists' comments were similar: *"horrible"* (T3), *"a bit chaotic"* (T10), and "*quite busy*" (T17).

### 9.1.2 Aspects of Social Norm

The semi-structured interviews included specific questions to reveal aspects about social norms, for both Maltese residents and tourists (Chapter 5, sub-section 5.4.4, Table 5.2). These questions provided insight into social norms, before the reform, on

three topics: impact on the environment, traffic congestion, and road rage. Information related to these topics was discussed in Chapter 4, sections 4.6 and 4.7.

Regarding the tourists' sample, pre-reform information was gathered from return tourists (eight in all, Chapter 5, Table 5.7). These visitors were able to recall events regarding the three aspects that contributed to societal behaviour before the Arriva service. They were also able to compare Maltese norms with their countries' norms related to impact on the environment, traffic congestion, and road rage.

## 9.2 Social norms pre-reform

### 9.2.1 Maltese residents

When asked about the impact on the environment, the nodal point for this theme was **pollution**. Participants referred to pollution deriving from the PTA buses, and from cars.

> *"I used to feel it (pollution) and see it…from the old buses…you had to stay away a long distance when you were driving behind them, because soot would come out. Even while waiting at bus stops, the bus would stop and start again and soot would come out." (L5, car user)*

> *"Before, if you were driving behind an old bus, you've had it. You would have to close the windows [of the car], because you couldn't breathe." (L4, car user)*

> *"The more private cars there are, the more pollution there is." (L11, bus user).*

On discussing **traffic congestion**, Maltese residents acknowledged the problem. Opinions about this subject varied between car users and bus users. Some car users justified this issue, and said that traffic congestion is expected. Car user L3 said:

> *"With the number of cars that we have and the type of roads that we have, in reality it (traffic congestion) is expected, I even imagine and expect that there should be more congestion" (L15, car user)*

Other car users blamed the road infrastructure and traffic management by the regulator for traffic congestion. The suggestions provided by car user L8, however, are car-oriented.

> *"…it's a nightmare, during peak hours…the roads contribute to the congestion…instead of re-routing traffic to different streets, everyone has to pass through bottlenecks. …sometimes there is a policeman or*

*TM, and they just keep waving their hands for cars to keep going, instead of keeping one lane for traffic…and keeping another lane free for traffic to just keep flowing. So they create the congestion…" (L8, car user)*

Bus users had different opinions from car users. Traffic congestion was considered a problem.

*"…traffic congestion is the worst headache we can ever have for the buses, because Malta is too small to say this is the bus lane, and no other traffic will use it. That wouldn't last in Malta; we are a small country" (L17, bus user)*

**Road rage** seemed to form part of everyday activities, leading to it being accepting as part of Maltese culture. Both car drivers and bus drivers suffered from road rage.

*"It's (road rage) expected, Mediterranean climate, heat, traffic congestion, over-crowdedness on the roads, it's expected. I think it's difficult for me to think that a Maltese person doesn't lose his temper while on the road…Even bus drivers, at times it's because they were grumpy or at times they were right in being angry…a lot of people park illegally, on double yellow lines, and no one says anything… Maltese are careless and undisciplined" (L9, bus user)*

*"The more private cars increase, the more there is traffic, and people get frustrated. Couple that with the fact that as a nation, we Maltese people do not always follow traffic rules, and I think that is a good recipe for road rage" (L5, car user)*

*"I have it (road rage)… I can understand that as a person you ideally follow the rules…most of the road rage derives from the fact that either people don't respect the rules at all, or people who follow the rules by the book…" (L15, car user)*

*"I used to suffer from a lot of road rage. You cannot do anything about it, you have to get stuck there, you cannot do anything, you're stuck in traffic. People don't help; no one gives the right of way. It's even worse - they go ahead and stay in the middle to close the road. Then you don't know whether you will manage to brake on time. You need a cigarette while driving" (L6, car user)*

Nodal points used to portray social norms included pre-defined and unrestricted themes. The pre-defined nodal points included customer care, comfort, and accessibility, while the unrestricted nodal points were PTA, tourists, government, culture, car, peer pressure, and school.

**Customer care** referred to the drivers' behaviour with the customers. In some instances, bus drivers of the PTA service were praised, but on other occasions, they were criticised for their poor attitude.

> *"…the orange, if they saw you (referring to the PTA bus drivers) running to catch the bus, they would stop to let you board the bus…" (L12, bus user)*

> *"…drivers…some of them were arrogant, they wouldn't give you the necessary time to sit down (on board the bus); they would drive immediately, irrelevant of who you are, whether an elderly person or not… I remember the PTA, they would give the wrong change, and fight" (L6, car user)*

On referring to **comfort**, a bus user recalled the lack of ambience on board the bus. The PTA service was not comfortable *"because they didn't have air conditioning" (L14, bus user).*

Car user (L6) referred to the lack of **accessibility** on board the bus. *"They (buses) weren't accessible in reality, if a mother had a pushchair… It was too high, even for luggage…" (L6, car user).*

Car user L4 recalled that the **PTA** service was *"frustrating for a variety of reasons"*. These reasons included service quality characteristics that were experienced daily under the PTA service.

> *"Time related problems, you never knew exactly when the bus would reach the bus stop; let's say, it was supposed to arrive at 8:30, and you wouldn't know whether it arrives at 8:30 or 10 minutes late. At times, I even waited for 20 minutes and the bus never came. It was rare, to be fair, but they weren't punctual. (L4, car user)*

As discussed in Chapter 4, section 4.4, Maltese people value **tourists**. It is embedded in Maltese culture to look after the tourist because of the importance of the hospitality industry to the Maltese economy. In fact, Maltese residents were concerned about the bus drivers' behaviour towards tourists before the reform.

> *"If a tourist boards the bus, for example, they would have bags and luggage, and if the tourist keeps his luggage next to him on the seat or on him/her, at times they (bus drivers) … charged them, for extra luggage, and at times they wouldn't charge them … it's like we got used to them." (L6, car user)*

Bus user (L17) attributed social norms to decisions made by **government**. She further combined governmental decisions with politics.

> *"Usually in Malta, it's not society that does something; it's usually the government who decides, and governments are slow to decide because of the votes. They are afraid to lose votes… That's the worst thing that could happen in Malta: politics. Everything is politics." (L17, bus use)*

Car user (L6) referred specifically to the Maltese **culture**, and compared Malta to other countries.

> *"Maltese society has a tendency to destroy things…our nature is, I feel, that we are not efficient. We're not the type like Germany, or England, who stick to the times. The attitude is Mediterranean…"(L6, car user)*

Another component related to culture was the old buses. Bus user (L11) said:

> *"In my opinion, I prefer the old ones (referring to the bus), because to me, that is a Maltese characteristic (L11, bus user)*

Another typical component in Malta is the **car**. Car user (L6) stated *"Us Maltese, we're used to the car, and everyone has his own car"*. She further continued to mention another issue, as if it were a normal concept: **peer pressure**.

> *"If you are waiting for someone who didn't use the car and came late because of the bus, automatically you would tell him/her, 'You have your car at home, why didn't you use the car?'"*

Another issue that emerged as typical for Malta is that when **school** starts, traffic increases. Bus user L12 observed that the school run creates congestion.

> *"In summer, the roads are empty…As from September (referring to when schools start), everywhere is clogged…" (L12, bus user)*

### 9.2.2 Tourists

Return tourists provided insight into the social norms before the reform. Return tourists, however, also observed daily activities that are typical in Malta. Other first time visitors referred to hearsay of what is usually done.

The **impact on the environment** was seen to be the same in Malta and in Spain. Return tourist T1 stated, *"I see the same in both countries in noise, and pollution".*

Return tourist (T3) referred to the problem of **traffic congestion**. She compared what Maltese people typically do to what people in Spain usually do.

> *"Horrible, because I think there are so many people using the car. I think per family, there are at least two or three cars, and they use the car for everything… In Spain…for example, going to work, if you live in the same area, they just meet somewhere, and you use only one car, because it's good for the petrol, because you waste less, and then you have company… But here, I think they use the car for everything, even if they can go walking, but they use the car… There is a huge traffic jam all day." (T3, return tourist, bus user)*

Return tourist T2 said that Maltese people are used to traffic jams.

> *"I was in a traffic jam between Sliema and St Julian's, and people were there just waiting, like they're used to it…"*

Tourists observed the differences in **culture** between Maltese people and their country with regard to how the former refer to public transport. Return tourist T1 said:

> *"Maltese people are a bit fed up with buses…and they hit the horn all the time, and they are very aggressive with them, and if they have a give way, they don't respect that… I see a kind of rivalry between normal people who use their own transport and public transport… In Spain, the culture is different; people respect public transport."*

Regarding **culture**, tourists also mentioned the old buses.

> *"Well, it (the bus) lost its characteristic… It was something specific for Malta." (Return tourist T1)*

> *"I liked the old one (bus), because it gave Malta character." (Return tourist T14)*

Two return tourists (T15 and T17) amusingly referred to the old buses as the *"bone shakers"*. T17 further recollected that they

> *"…had character of course. They're part of Malta's history…some were a real mess, but some of them were old; they've been kept very well… with maintenance and polish. I was sad to see them go."*

For return tourist T3, the bus drivers were part of the Maltese culture. She described their attitude, and how they typically kept the bus.

> *"They were a bit rude…But it was even funny, because you could see how they had a poster of Our Lady, and near it was a poster of a girl with a bikini... But I think it wasn't that bad because I had very good memories about it…"*

Associated with culture, as has already been seen in what tourist T1 said regarding honking horns and aggressiveness, **road rage** is another issue in Malta.

> *"They use the horn a lot for everything; they are always 'Beep! Beep! Beep!…I don't know why…they use the horn a lot." (return tourist T2)*

Tourist T2 compared road rage with the situation in Madrid, and said that people there were more angry than in Malta.

Another observation related to road rage was people driving fast and not observing the law.

> *"Very angry (referring to road rage). They drive very fast…Most of them (car users) don't wear the seatbelt…almost all of them are either smoking or eating pastizzi or on the phone, or even reading the newspaper, while driving. (In Segovia, Spain) seatbelt… there was a huge campaign…I think the only thing we are doing well in Spain." (return tourist T3)*

Another Maltese trait that was associated with road rage was **hearsay**. Road rage is a common thing, and if tourists have not experienced it, they have heard about it, as occurred with the first time Finnish tourist.

> *"…I've heard that Maltese might drive a little bit aggressively compared to … Finland." (T13).*

First time visitors to Malta observed daily activities and viewed what is typically done in Malta. Such observations were mainly related to the **driving** on the left-hand side of the road and the **infrastructure**.

> *"We're not used to driving like this, with the driver's seat on the right: everything is on the opposite side" (T8)*

> *"Some roads (need) better quality, more paving…fewer holes in the road, but of course I mean this road, you can't really widen it because there's buildings and it is an island…it (infrastructure) is thought through so much in Helsinki, obviously because it has 0.5 million people living there and it's the capital, so it's quite well thought out." (T13)*

Return tourists experienced **peer pressure** to use the car from their Maltese friends.

> *"They (friends) told me, 'You should get a car…in order to save time…'" (T1)*

### 9.2.3 Summary of Findings

The discourse analysis in sub-section 9.2.1 shows that pre-reform, the norm for Maltese residents was to have a car and accept traffic congestion. In addition, peer pressure played a role in car use. It was acknowledged that traffic congestion causes pollution, but even the buses were a source of pollution. Road rage was associated with traffic congestion and car use. Additionally, bus drivers' attitudes were a typical component of the bus service, which itself was frustrating for car users. The lack of motivation to improve the service was attributed to the culture, that is, the Mediterranean attitude, which led to Maltese people being described as inefficient. Maltese residents expected the government to take action to implement changes, but typically, politics took over planning and policymaking.

Sub-section 9.2.2 revealed that tourists observed Maltese daily practices and compared these practices with the practices of their countries. They referred to Maltese car users as seeing the bus as a rival and showing no respect to public transport. Tourists observed that traffic congestion was exaggerated in a small country like Malta, and they associated this issue with Maltese people using the car. One tourist even mentioned that his Maltese friends pressured him to use a car while in Malta. Tourists did not think that the impact on the environment was any worse than in other countries while in relation to traffic congestion, tourists referred to road rage as a trait, especially the honking of horns. Those tourists did not experience road rage in Malta had heard about it. Furthermore, tourists observed that the road infrastructure needed to be improved. When referring to the bus service, tourists referred to the old buses as being a characteristic of Maltese culture.

This section showed that social norms pre-reform were characterised by car use and its related impacts. The following section shows whether the reform influenced these social norms.

## 9.3 The reform and its influence on social norm

Section 9.1 referred to expectations as indicators of social norms. Expectations are influenced by promises, but also by the perception that individuals form based on their assumptions (Chapter 2, sub-section 2.7.2). People then measure their expectations against reality (their truth) (Feindt & Oels 2005). In this research, reality is the

implementation, and performance of the bus service reform (Chapter 2, sub-section 2.7.3). The interviewees' discourse about their expectations reveals the reform's effect on people's realities and expectations, which influence social norms.

The promised bus service was presented in Chapter 4, section 4.10. Promises lead to expectations, and it is important to live up to them (Muñoz & Gschwender 2008). If issues arise, however, as happened in the case of Malta's bus reform (Chapter 4, section 4.11), expectations are influenced negatively. Through discourse, people's reactions to their expectations reveal the impact of the reform on social norms.

### 9.3.1 Maltese residents

Maltese residents' expectations were raised when the reform was announced (Attard 2012), as the government promised high-level specifications of how the new bus service would operate (Bajada & Titheridge 2016).

The expectations of Maltese residents were related to some of the pre-defined service quality characteristics, such as time, information, customer care, and comfort. Other themes were not pre-defined; these included reform, maintenance, government, and disappointment.

Regarding **time,** car user L5, was a bus user before the reform. She argued that it was not possible to rely on the new service.

> *"The service has to be good and reliable. I cannot go to work late every day. I used to leave home early enough at 5:30 am or 5:45 am. If I keep on arriving late for work, how much earlier can I wake up? Apart from that, I used to catch the second bus on schedule, so earlier than that there was only one bus. I think it was the 5 am bus, but there's a limit. Because you have other responsibilities; there's family, and in the evening, if you finish from work late and you have to wait another one and a half hours to get home, what do you have left from the day? That is one of the reasons why I changed to my car, because it was too time consuming." (L5)*

Although it was promised that **information** would improve with the reform (Chapter 4, sub-section 4.10.4), the changes were not enough to fulfil people's expectations. Bus users showed their concerns about information.

> *"They (Arriva) never got the electronic signage right, ever. The boards on certain interchanges are literally useless…(The government) didn't do anything (to provide information) apart from*

*sending a couple of leaflets to people's homes, which were completely confusing… I expected that every day I would see continual information on television, radios, about how the new system will work ad nauseam… On board, the buses most of the time … showed the wrong direction. This situation created a lot of confusion, especially for the tourist… This led to a lot of people asking the bus driver the same information …and the driver getting angry…" (L9)*

Arriva was bound by a service level agreement to improve the **customer care**, particularly the bus drivers' attitude towards customers. As discussed in Chapter 4, section 4.2, customer care improved; however, there was room for more improvement as bus user L2, and car user L15, who was a bus user at the start of the Arriva service, noticed.

*"I used to go to the information office in Valletta… Arriva used to employ people who were unfit for the job… employees were rude; they didn't take care of the customer. They used to employ the worst possible people." (L2)*

*"…lack of customer care… I used to ask at the information office in Valletta. They weren't able to tell you at what time the next bus was due, or how much time you have to wait for the next bus to arrive, or which alternative bus you can get, with them (Arriva) there was no service." (L15)*

People were hopeful that the Arriva service would provide **comfort**. Once the reform was implemented, however, many people lost faith in it. Car user L1 stated:

*"People lost trust (in the service); even to go to Valletta, you have to wait for a long time in the sun …" (L1)*

People's expectations of the **reform** were high, because it was a much-needed reform. Car user L4 recalled the strike by the PTA before the reform, and said that everyone had high expectations of the reform.

*"Everyone said that the reform was necessary; everyone was expecting it… but in the end, it was a cosmetic change. Apart from the minor changes to routes, and the new buses, but nothing spectacular." (L4)*

According to car user L15, Arriva lost an excellent opportunity to improve traffic congestion. The expectations were that the service would encourage people to use the bus.

*"I think that when the Arriva service started, in some areas in particular, there was already a drive to make it difficult for cars to go to that place, for instance, the pedestrianisation in Valletta, the CVA (controlled vehicular access)…So these policies attracted people to use public transport. However, to use public transport, obviously, people need good public transport. When Arriva started the service, people had that expectation (that it would be a good service). I know a lot of people who started trying the Arriva service, because they said that the buses were new, the drivers were educated, there was the a.c. They (the people) weren't catered for, and lost trust in the service, and a lot of people now are not ready to try it again. So now there needs to be a greater effort for the government to remarket the service to the public." (L15)*

**Maintenance** was another setback for Arriva. Bus user L9 pointed out this issue. He had expected that Arriva would look after the vehicles.

*"The bendy buses…used to catch fire… Probably this was a problem linked to maintenance… Arriva's maintenance leaves much to be desired. To me … the company itself was the cause of the failure. … The promise that the vehicles were going to be cleaned every day, it never happened. These things depend on Arriva, not on the government." (L9)*

While bus user L9 blamed Arriva for the problems with the bus service, car user L5 referred to the **government**'s promises. These promises were not fulfilled with the reform.

*"I thought that the change would be for the better. It was touted as much, which means that at the time, the government said that the change would be for the better. In reality, there was an improved change from the physical perspective, the bus itself… Then it all boiled down to the buses not arriving on time…because they would be stuck in traffic…" (L5)*

Bus user L9 mentioned that people forgot how bad the service offered by PTA was. People were overwhelmed by the **disappointment**.

*"People forgot. People were blinded with disappointment related to the new service; they were expecting better… They forgot the extent to which the other service was bad. I remember everyone was packed in an overcrowded bus, much more than they are nowadays…the bus driver shouting at people, and at times, stealing from them, especially tourists. It seems like we forgot these things. Nevertheless, if we invested a lot of effort and money for a better service, you do not expect these problems." (L9)*

### 9.3.2 Tourists

Tourists generally did not seem to have prior expectations. When they had expectations, these derived from their experience of the bus service. Furthermore, when the Arriva service did not meet their expectations, tourists seemed to justify the service.

The service quality characteristic mentioned by tourists regarding the Arriva service was **accessibility**. Tourist T11 mentioned an instance about having to access the bus when many people were waiting to board.

> *"There were a lot of people, and there was only one bus. More people arrived trying to get the bus; it was like free for all trying to get on the bus… It was a public holiday, compared to other days, so you would expect that, to have fewer buses on a public holiday." (T11, return tourist)*

### 9.3.3 Discussion

The reform influenced differently the social norms of the two population samples. Maltese residents had high expectations about the reform, and the reality they experienced, or as car users heard about, was different from the promises that were made, which influenced their expectations.

With the reform, the norm for Maltese residents was to expect a drastic improvement. The reality of the reform, however, led to a loss of trust amongst the Maltese residents, which implies that this distrust became the norm after the reform. In fact, interviewees L5 and L15 were bus users before the reform, and became car users after the reform.

As visitors to a foreign country, tourists seem to visit Malta with an open mind, and are free from the social norms of their country. Regarding the reform, they did not set expectations that were used as reference points to compare the reality that they experienced. Contrarily, they justified issues regarding accessibility.

After the reform, social norms could have influenced attitudes, intentions, and perceived confidence on bus use. This effect is explored in the following sections.

## 9.4 Effects of social norms on attitudes towards bus use

Attitudes are interpreted as the evaluations of bus service quality characteristics. These evaluations are influenced by prior knowledge, hearsay, and/or experiences (Chapter 3,

sub-section 3.6.2). Figure 9.1shows that attitudes can be influenced by age, gender, and service quality.

Most of the interview questions were used to identify discourse about the interviewees' attitudes towards the Arriva bus service. These questions included *"What is your opinion about the bus service in Malta?"*, *"How did you hear about the bus service in Malta? What is your opinion about it?"*, *"How would you describe the bus service quality? Can you recall some experiences?"*, and *"Would you like to add anything else?"* (Chapter 5, Table 5.2).

Social norms regarding attitudes refer to how the interviewees compared the Arriva service with the PTA service, based on experiences or hearsay. Regarding the tourist interviewees, attitudes could be gauged particularly from return tourists.

The main issue for both Maltese residents and tourists was **time**. Participants mentioned the unreliability and lack of punctuality of the service.

> *"You have to wait half an hour more without anyone giving you a reason why… Arriva never operated according to the time-table." (L2, bus user, female, 60+ years)*

> *"It was over an hour to go there… It took longer on the way back with the X bus…it took longer than the 41 or 42." (T11, return tourist, male, 51-60 years)*

Another issue was linked to **accessibility**. Maltese residents and tourists mentioned similar problems. The interviewees were used to using particular routes, which with the Arriva service were no longer available.

> *"Under Arriva…we lost certain routes that were direct from hospital. I live in an area where you don't have a direct route." (L17, bus user, female, 60+ years)*

> *"…you won't get any (buses); you need to go to the bus station. There used to be a lot more buses before." (T14, return tourist, female, 60+ years)*

**Information** was influenced by hearsay. When people have to rely on what other people say, this implies that there was not enough information for the public to use the bus.

> *"If you trust the schedule…they said that the buses…are not reliable, and you have to be there before, and you have to wait for a long time." (T4, first visit, female, 21-30 years)*

Interviewees mentioned that compared to the PTA service, the **bus drivers** had improved; the latter were more professional than they were before, so **customer care** became better.

> *"They are better than they were…it's a more professional service…better than the bus drivers of the old service…I trust them more because of the company image…" (T1, return tourist, male, 21-30 years)*

> *"Now, you're not afraid that if you talk to the bus driver, he will attack you with a water pipe, which he has beneath his seat. These things have stopped…because there was driver training…and in my opinion, because of the cameras on the bus." (L9, bus user, male, 31-40 years).*

The interviewees associated **comfort** with the **fleet** and the **articulated buses**. In some instances, comfort improved with the Arriva service. For example, L2, a bus user, said that the windows on board the old buses were jammed, and were difficult to open, and the aisles were narrow. She further stated that with Arriva, the fleet had wider aisles, and there was air-conditioning on board the buses. Nevertheless, the latter was criticised after the reform because, at times, the temperature was too low.

> *"The a.c. was on. It was extremely cold; they don't regulate it." (L8, car user, female, 51-60 years)*

The articulated vehicles operated by Arriva were second-hand vehicles imported from London. The vehicles were poorly maintained, which led to most of them catching fire (Times of Malta Online 2014). Both Maltese residents and tourists bus users mentioned their fear and state of insecurity when using these articulated vehicles.

> *"I used to be afraid of the bendy buses" (L13, bus user, female, 60+ years)*

> *"…the bigger buses…they were a bit old, and some of them caught fire. This is very scary." (T3, return tourist, female, 21-30 years)*

Linked with comfort was the problem of **overcrowding** on board the bus.

> *"People wanted to get off the bus, on the way from the airport; they rang the bell, and they couldn't alight from the bus, because of the crowd, so the driver continued with the trip. They weren't very*

*happy…. They couldn't fight their way through the people; there were too many people, and they got stuck on the bus." (T15, return tourist, female, 51-60 years)*

### 9.4.1 Discussion

Attitudes seemed to be influenced by service quality rather than by age or gender. With the reform, the bus services improved in certain aspects, for instance, comfort. These same aspects, however, required further improvement. The fleet was no longer the old buses; however, the articulated vehicles led to safety issues and people not trusting them.

Time, information, and accessibility were major characteristics that it was promised would improve with the reform. Nevertheless, there were negative comments about them with the Arriva service.

## 9.5 Effects of social norm on intentions towards bus use

For the purpose of this research, intentions are interpreted as the willingness and motivation to perform a direct behaviour, and the considerations involved to perform a behaviour (Chapter 3, sub-section 3.6.2). In the interview, two questions indirectly targeted intentions: *"What is your opinion about using the bus?"* and *"Do you think that the bus is a way forward to improve these issues?"* The issues were the three factors used to gauge social norm, impact on the environment, traffic congestion, and road rage.

### 9.5.1 Maltese residents

The Maltese residents who showed intentions to use the bus mostly said that they would do so on condition that the service was reliable. Interestingly, existing bus users commented on the intention to use the bus. Their discourse was intended for other people, probably car users. Other interviewees, who were car users, said that it would be very difficult for them to use the bus; they did not intend to do so on a daily basis.

*"If it's good (bus service), it's comfortable, you don't have maintenance issues with your car, you can read a book, talk to people, stay relaxed, no hassle. If it is on time." (L12, bus user)*

*"I'll be honest: I will only use it if I cannot use the car. I know it's my fault, but I will only use it if I cannot use the car." (L4, car user)*

*"I would suffer using it (the bus) every day." (L6, car user)*

*"I don't mind using the bus. If the times were more reliable, probably I would make more frequent use of the bus." (L3, car user)*

Other interviewees changed their discourse on intentions in order to include everyone else. This change in pronouns suggests that participants wanted to disown their intentions, and include the rest of society.

*"I'm sure that a lot of people would realise…it has to be economically viable to use the bus…However, at the moment the difference is not enough between car use and bus use. So people, would tell you, I prefer to use the car." (L15, car user)*

*"I think not only me…people should use the buses more…" (L16, bus user)*

### 9.5.2 Tourists

All tourist interviewees were bus users. In their countries, most of them used public transport, including the bus. In some instances, as reported by T12, the bus was the only option because, for example, in rural Scotland, there were no trains available; hence, they had to use the bus.

Similar to the Maltese residents' comments, they said that if the bus service were reliable, people would use the bus more. Most of the tourists were captive bus users in Malta, as they did not have another public transport alternative. The taxis were much more expensive than the bus, and they did not drive on the left-hand side of the road, implying that they could not hire a car.

*"To be honest, in Spain, I don't use the bus as much as here because I have my own car…I don't have a car here, and I don't really want to use the car…" (T1)*

*"If there is a really good bus service here in Malta, people will use the bus…" (T3)*

### 9.5.3 Discussion

An important point to consider while reading and interpreting the interviewees' comments is that the interviews were collected one year after Arriva had left Malta. While talking about and referring to pre-reform issues, the interviewees switched to daily activities that are considered normal in Maltese culture, irrespective of the reform.

This change in discourse was particularly observed when interviewees mentioned traffic congestion and road rage.

Both Maltese residents and tourists who were captive bus users claimed that if the bus service were more reliable, more people would use it, and car users would use the bus if they were not able to use their car. The discourse regarding intention suggests that social norms do not influence intention. Rather, it seems that intention to use the bus is influenced by the service quality of the bus service, particularly time-related characteristics.

## 9.6 Effects of social norm on perceived confidence towards bus use

In this research, perceived confidence is referred to as the ability to use the bus and/or the ability to intend to use the bus based on evaluations of the bus service (Chapter 3, sub-section 3.6.2). The discourse analysis focuses on the ability of the individual to use the bus, which was addressed by a specific question in the interview (Chapter 5, Table 5.2), *"Do you think that as an individual, you need to do something to solve these issues?"*

As a prompt, another question addressed the issue of whether family and friends would influence the interviewees in using the bus. This prompt was asked to identify whether social norm, through peer pressure, influenced the interviewees' perceived confidence in using the bus.

As illustrated in Figure 9.1, perceived confidence is measured through the variables 'age', 'gender', and 'service quality'. The ability to use/to intend to use the bus is influenced by these three variables (Chapter 3, section 3.7).

### 9.6.1 Maltese residents

Some Maltese resident car users said that they would prefer to use the bus, as transport policies, such as **parking,** had led them to think about using the bus.

> *"I would prefer to use the bus, rather than the car, there is no hassle for parking, and parking is expensive." (L1, car user, female, 60+ years)*

**Captive bus user** L2 said that she preferred using buses rather than getting lifts from friends, as the bus gave her independence.

*"I prefer using the bus everywhere I go…" (L2, bus user, female, 60+)*

However, the ability to use the bus seemed to be hindered by the service quality.

*"I tried. I tried by using the old service. When Arriva started, I used the new service; I continued to use it despite the problems… I tried, by doing my part and using public transport…" (L5, car user, previous bus user, female, 31-40 years)*

Others were able to use the bus, but preferred not to.

*"If I want to, I can use it. Let's be honest, if I want to I can use the bus every day…but everything has its advantages and its disadvantages" (L6, car user, female, 31-40 years)*

The rest of the interviewees did not even consider using the bus. As an alternative, they referred to **complaining**. As the interviewees themselves mentioned, complaints are at times useless, ending in grumbling (as discussed in Chapter 4, sub-section 4.4.2).

*"I feel that as a member of the community, you need to express yourself and ideally contribute to the debate… It's useless staying in a corner grumbling." (L15, car user, previous bus user, male, 31-40 years)*

When asked about peer pressure, some of the interviewees said that they were not affected. Other interviewees, however, hinted that their families and friends would judge them, or that they worry about them.

*"They (family and friends) tell me, 'You're not restricted with time; you don't have to go to work. If you were restricted with time, you would not use it (the bus)" (L14, bus user, female, 60+ years)*

*"If I leave the car to become a wreck at home, they would say I'm crazy… Once you have the car, you're paying for maintenance and insurance…" (L6, car user, female, 31-40 years)*

*"(Family and friends would think that) I'm crazy!" (L8, car user, female, 51-60 years)*

Bus user L12 jokingly said that his family and friends though that he was a **miser**. He also said that his employer had made an agreement with Arriva that would allow him to use the bus for free.

*"I'm a miser! That's what I think they say… At work, they gave us this (showing the saver card) to use Arriva for free. It's worth it…" (L12, bus user, male, 41-50 years)*

### 9.6.2 Tourists

Tourists appeared to be pro-environment. Their ability to use the bus was motivated by the idea of contributing to help the environment.

> *"If you use the bus, you avoid congestion… If everybody used the bus, there would be less congestion…more people in one vehicle" (T1, male, 21-30 years)*

> *"In Belgium, taking public transport is seen as something good to do for the environment…" (T10, female, 21-30 years)*

Generally, the tourist interviewees said that it is normal to use the bus. Their family and friends would be happy with them using the bus at home, and as tourists.

> *"They think it's normal to take a bus…" (T10, female, 21-30 years)*

> *"It's a normal thing [to use the bus]; I mean they are not proud of me, they are not worried…it's normal" (T1, male, 21-30 years)*

There was a one-off comment by tourists who, for instance, said that they would not dare to use the bus in Denmark at night because it would be used by drunk people. Generally, however, the tourists' mind-set was a perceived confidence in using the bus. Furthermore, their family and friends thought it was normal to use the bus.

### 9.6.3 Discussion

The interviewees' comments showed the differences between the two population samples. Maltese residents' perceived confidence was not influenced by their physical abilities, such as age or gender. It seems that their perceived confidence was influenced by the service quality, for instance, time taken to arrive at the destination. Moreover, the social norm is influenced by peer pressure to use the car, and this pressure influenced the ability to use the bus, as interviewees thought that they would be judged negatively if they used the bus.

Contrary to this negative judgement by Maltese family and friends, tourists thought that it was normal to use the bus. Indeed, they thought that their ability to use the bus was beneficial economically, and even more environmentally.

## 9.7 Summary of findings

With the PTA service, the norm was that the buses, although a feature of Malta, needed improvement. They were not accessible, they polluted the environment, and bus drivers

were ill mannered. Change was expected, and the government raised people's expectations. However, once the reform had been implemented, it was disappointing, particularly for the Maltese residents, who also lost trust in the bus service. Interestingly, tourists' expectations were different from those of Maltese residents, because they were not subject to the promises. Hence, high expectations influenced social norms.

For both Maltese residents and tourists, the discourse analysis revealed that bus service quality particularly influenced social norms. This was the case for attitudes, intentions, and perceived confidence.

This qualitative analysis was intended to support the quantitative findings in this research. In a closer examination, using quantitative data, Chapter 7 (sub-section 7.2.3) also revealed that for Maltese residents, attitudes towards the service quality influenced the intention to use the bus. The exploratory analysis in Chapter 6 revealed that 'time' was one of the major issues, which was also the case in the discourse analysis. The tourists' positive attitude and approach towards bus use was observed in both the quantitative (Chapter 6, sub-section 6.6.1) and qualitative data.

Regarding attitudes, the qualitative data were more focused on the negative side, and the need for improvement; however, the quantitative data showed that there were more improvements post-reform (Chapter 6, sub-section 6.6.2).

The tourists' expectations were noticeably different from the Maltese residents' expectations in the qualitative analysis. Even the quantitative analysis revealed that the tourists' expectations were more positive than were the Maltese residents' expectations.

# Chapter 10 Bus Policy and the Reform

This chapter answers RQ5: *"To what extent did institutional structures and relevant policy influence the bus service reform as a policy tool, and how did transport professionals evaluate the bus service reform?"* It addresses part of the conceptual model, as highlighted in Figure 10.1. This diagram illustrates policy that is linked to the intervention for behaviour change (the bus reform), which leads to bus use. It also shows the complex factors (greyed out) that exist, but which may at times be overlooked; however, they might lead to bus use. The links in the diagram (Figure 10.1) show that bus use leads again to policy.

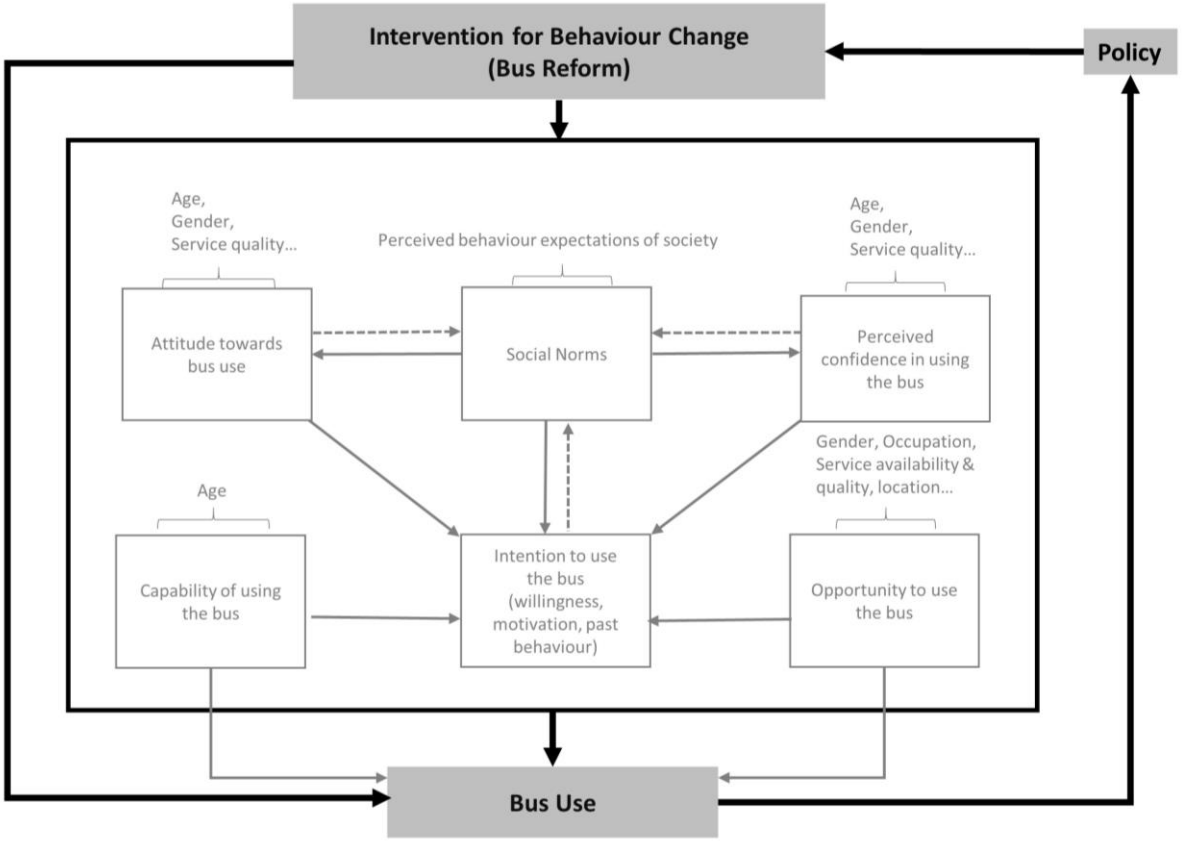


Figure 10.1 Components of the proposed model that relate to RQ5

In this research, policy is interpreted in three interrelated ways. It refers to the bus reform as the intervention for behaviour change; it is interpreted as the institutional structures, and relevant documents that lead to the reform; and it is considered a policy change. Once the reform is implemented, it depends on whether the reform is successful to modify the policy for improvements (Chapter 3, sub-section 3.6.1).

Three objectives target RQ5. These are objectives 7, 8 and 9 (Chapter 5, sub-section 5.3.5). Objective 7 seeks to understand the extent to which institutional structures influenced the bus service reform as a policy tool, while objective 8 seeks to understand the extent to which policy influenced the bus service reform. Secondary data are used to target these two objectives. For objective 7, online information is used from ministries, authorities, and the Department of Information (Government of Malta 2015), and for objective 8, policy documents are analysed. Insider knowledge provided by the researcher is used to fill in details where necessary (Chapter 5, sub-section 5.3.5).

Objective 9 seeks to identify how transport professionals evaluated the bus service reform. Primary data are extracted from the semi-structured interviews, which are analysed through discourse analysis (Chapter 5, sub-section 5.3.5). Table 10.1 summarises the analyses concerning RQ5.

Table 10.1 Bus Policy Analysis

| Feature to analyse | Method of Analysis | Output |
|---|---|---|
| Institutions | Institutional Analytical Development Framework (IAD) | Identifying how institutions influenced decision-making for the reform to be implemented |
| Policy Documents | Policy Evaluative Criteria | Evaluating the policy documents linked with the bus reform |
| Semi-structured interviews with transport professionals | Discourse analysis | Evaluating the transport professionals' opinion about the bus reform |

## 10.1 Institutional Analysis

Institutions determine policies and their implementation; they are rules that affect human behaviour (Cairney and Heikkila 2014). The Institutional Analysis Development

Framework Approach (IAD) applies an investigative scope, and consists of rules and the action arena (Ostrom et al. 2014), as discussed in Chapter 2, sub-section 2.6.4.

The rules explain and justify decision-making. There are seven classifications of rules: boundary, position, authority, scope, aggregation, information, and payoff (Ostrom et al. 2014). Each rule is described in Chapter 5, Table 5.11. Based on Hijdra et al.'s (2015) work, the rules are analysed against a set of four project classifications: agenda setting, programming, planning, and implementation. These project classifications are explained in Table 5.12 (Chapter 5, sub-section 5.6.3). This method of analysis is the preferred option because it is a practical way to understand how institutional structures influence the bus service reform.

The action arena consists of actors and the action situation (Ostrom et al. 2014). The actor is the stakeholder, that is, a single individual or a group representing a corporate actor. The action situation comprises seven characteristics that include the actors' involvement (Ostrom 2005); these are listed in Chapter 2, sub-section 2.6.4. Each characteristic is referred to in sub-section 10.1.2.

The IAD Framework Approach adopted in this research has two units of analyses, namely, the action arena and the rules. The former starts with describing the actors, and the action situation. The latter are analysed with the project classifications.

### 10.1.1 The Actors

The actors discussed in this section are the stakeholders who had a primary role in the bus reform. They were the individuals and corporate actors who contributed to implement the reform. Where possible, information about the actors should include their roles and responsibilities, their relationships with other actors, and their roles in the reform.

*The Prime Minister*

The Prime Minister was the leader of the Nationalist Party, the political party that won the election of 2008 (Electoral Commission Malta 2015). In the Budget Speech of 2008, however, the Prime Minister mentioned that all the buses in the public transport service would be made accessible (Department of Information 2008).

Once the election was over in March 2008, the Prime Minister recommended his selection of ministers to the President of Malta. The latter then appointed them to form the Cabinet of Ministers. Thereupon, the Prime Minister set up and presided over the Cabinet Committee for National Projects, which met regularly to discuss nation-wide projects, amongst them the Malta bus reform.

The Prime Minister assigned the ministries to relevant ministers. One of the ministries was the Ministry of Infrastructure Transport and Communications (MITC).

*The Ministry of Infrastructure Transport and Communications*

The MITC was responsible for the bus reform. The branch in the ministry that was responsible for transport included the following chain of command. Responding directly to the Minister of Infrastructure, Transport and Communications were two Heads of Secretariat, who were in charge of five policy managers, each dedicated to different projects.

One of the Heads of Secretariat was responsible for the Malta bus reform. The role of this Head of Secretariat of MITC was to make sure that the bus reform project took place. Thus, he coordinated meetings with different stakeholders to manage the implementation of the reform. The different stakeholders included, amongst others, private and public entities, lawyers, and the PTA.

One of the five policy managers was assigned the bus reform as a project to manage. He was next in line following the Head of Secretariat, and he performed tasks as required by the latter. He also met stakeholders, as did the Head of Secretariat of MITC.

*Minister of Infrastructure, Transport, and Communications*

The Minister of Infrastructure Transport and Communications was the political champion for the bus reform to take place (Attard 2012). He authored the policy document "Public Transport in Malta. A Vision for Public Transport which fulfils public interest in the context of environmental sustainability" (MITC 2008). This policy document was the trigger for the bus reform to take place.

The Minister of MITC was responsible for the regulator of land transport, Transport Malta (TM), infrastructural works related to road works, under TM, IT, and energy. He was also a member of the Cabinet Committee for National Projects.

*Transport Malta*

Transport Malta, formerly known as Malta Transport Authority, was the regulator of land transport. It comprised six directorates, namely, Transport Strategy, Licensing and Testing, Roads, Public Transport, Corporate Services, and Traffic Management. Table 10.2 shows the responsibilities of each directorate. In 2010, the Minister of MITC reformed this institution to combine land, maritime, and aviation directorates. With this institutional reform, the Authority changed its name to Transport Malta (TM) (Transport Malta 2010a).

Table 10.2 Malta Transport Authority Directorates and their responsibilities

| Directorate | Responsibilities |
|---|---|
| Transport Strategy | Transport policy and planning |
| Licensing and Testing | Issuing of road licenses and regulator of driving instructors, and operators |
| Roads | Road design, architecture and engineering, and road maintenance |
| Public Transport | Regulator of public transport including buses, and taxis |
| Corporate Services | Human resources, customer care and procurement for the Authority, including tenders |
| Traffic Management | Management of traffic on the roads, including speed cameras, and traffic calming measures |

In 2008, when the bus reform was being planned, four employees of the Transport Strategy Directorate were seconded to the project, and relocated within the MITC; they answered to the Policy Manager responsible for the bus reform and the Head of Secretariat. This group of transport professionals worked specifically on the bus reform. Their role was to provide the technical and strategic material required for transport planning and reform implementation. They participated in meetings organised by the Head of Secretariat and met with the same stakeholders to discuss, and eventually implement the bus reform. As part of their remit, they worked closely with foreign consultants, Halcrow Group Limited.

*Foreign Consultants*

Halcrow Group Limited was the group of foreign consultants who worked on the bus reform, together with the four transport professionals from TM. They provided their expertise on technical and strategic aspects for the implementation of the reform.

Together with the transport professionals from TM, they recommended the ideal network, contract details, and implementation strategy to the Head of Secretariat. In

addition, they participated in presentations during the stakeholder meeting that launched the policy document (MITC 2008) and the reform in December 2008 (Xuereb 2008).

*The Malta Environment and Planning Authority*

The Malta Environment and Planning Authority (MEPA) was part of the Prime Minister's portfolio. MEPA was the authority responsible for the environment and land use planning. The Prime Minister's aim of having MEPA under the OPM was to ensure better transparency and to study wider issues involved through policy reviews and liaison with the different ministries (The Malta Independent Online 2013).

MEPA was a key stakeholder for the implementation of the bus reform. This institution was responsible for the approval of permissions for land development. Therefore, planning applications regarding major interchanges, bus priority lanes, and bus stops had to undergo full development permission through MEPA.

Eventually, MEPA underwent a demerger to separate the environment directorate from the land use planning directorate (MEPA 2016). This demerger happened 16 years after the Planning Authority had merged with the Environment Department. After the demerger, these institutions became the Planning Authority (Government of Malta 2016a) and the Environment and Resources Authority (Government of Malta 2016b).

*Other Stakeholders*

Other stakeholders refer to the groups, organisations, or individuals that were involved directly or indirectly in the bus reform process. These stakeholders included the PTA, local councils, and the National Commission for Disabled Persons, amongst others.

The PTA together with the Transport Federation, which included taxis, red minibuses, and hearses, organised an indefinite strike in July 2008. This strike took place as the Minister of MITC together with the bus reform announced a series of other markets that were to be liberalised within the transport sector (The Malta Independent Online 2008). The strike lasted four days and led to traffic problems in the Grand Harbour Conurbation, including Valletta and Sliema (Bugeja Coster 2008).

An information session was carried out in December 2008 (Xuereb 2008) to which all members of the public were invited. The most prominent attendees were members of

the PTA; most of the driver-owners attended the conference, and they were vociferous in showing their concerns (Xuereb 2008).

Non-governmental and governmental organisations participated in a public consultation that was carried out in March 2009 at which interested parties voiced their opinions about the bus reform.

Local councils were invited for a briefing session on the bus reform in April 2009. They were given information packs and CDs with the new route networks and bus stops. The same information was sent to the local councils that had been absent from the briefing session. The local councils were supposed to provide feedback about the new bus routes and bus stops within a stipulated timeframe.

Figure 10.2 summarises sub-section 10.1.1. It shows an organigram of the different actors involved in the bus reform.

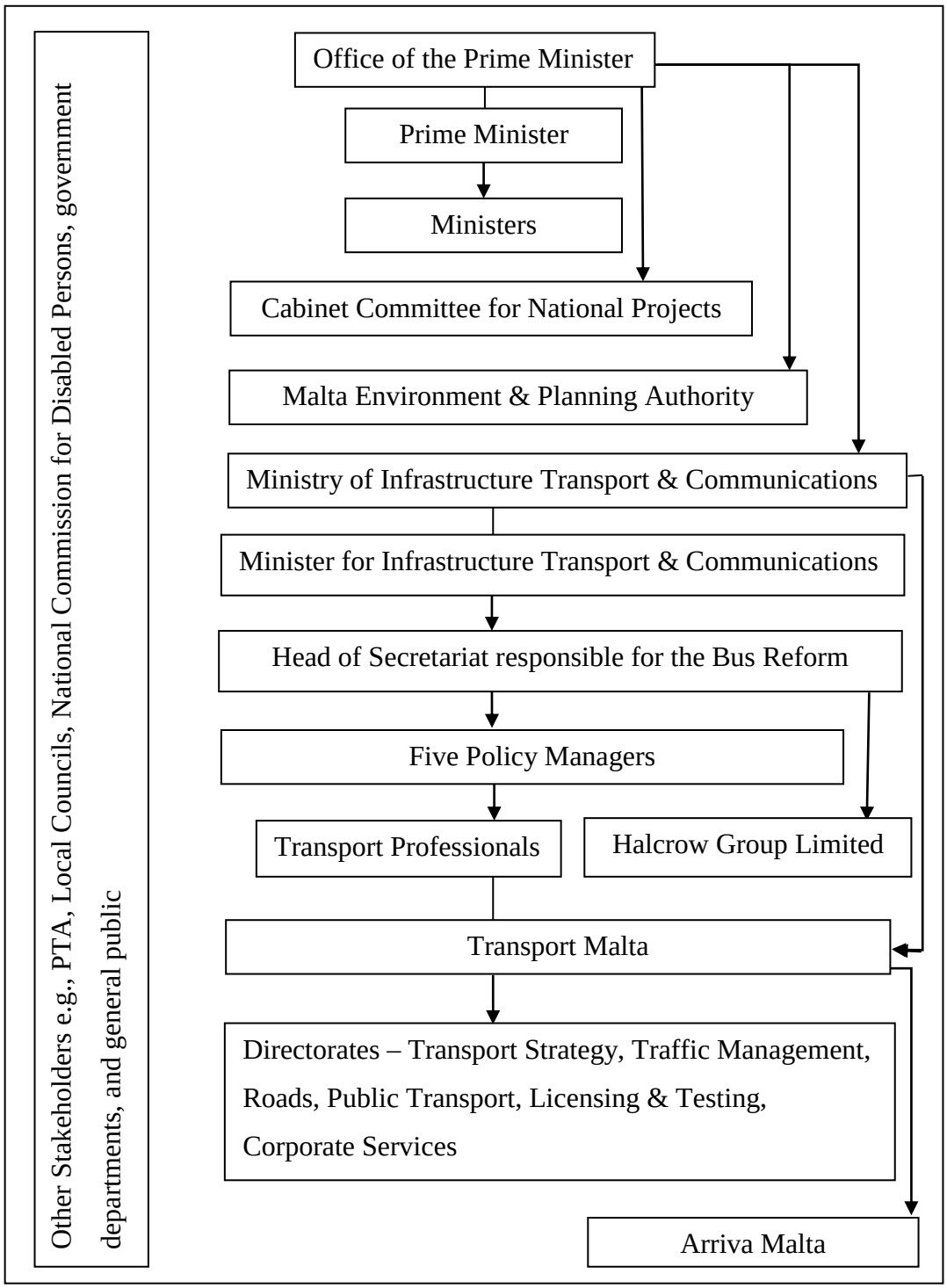


Figure 10.2 An organigram of the different actors involved in the Malta bus reform

### 10.1.2 The Action Situation

The Maltese context regarding mode use, the bus service offered by the PTA, the need for the reform, and the promised bus service are presented in Chapter 4 sections 4.7 to 4.10. Additionally, Chapter 4 provided information about Malta, its people, the importance they attribute to tourists, the culture, the geography, and the socio-economic characteristics. The case study in Chapter 4 presented the social space where actors interact and communicate, and where the bus reform was implemented.

The bus reform was planned in a relatively short time and was implemented overnight. Table 10.3 summarises the main events involved in the bus reform timeline.

Table 10.3 Malta Bus Reform Highlight of Events

| Month | Event |
|---|---|
| March 2008 | New Government appointed following general elections |
| July 2008 | Strike by public transport entities including PTA |
| July 2008 | Publication of policy document that launched the bus reform |
| December 2008 | Information session about the bus reform |
| March 2009 | Public consultation about the bus reform |
| April 2009 | Information session and public consultation with Local Councils |
| July 2009 | Publication of Expression of Interest for Operators to deliver and run the bus services for 10 years |
| October 2009 | Issue of Tender to select the operator of the reform from the four selected eligible operators |
| August 2010 | Publication of the successful bidder (Arriva Malta Consortium) and start of contract negotiations |
| November 2010 | Signing of Contract between Transport Malta (regulator) and Arriva Malta Consortium (operator) |
| July 2011 | Implementation of the Malta bus reform |

Source: Adapted from Attard 2012

As discussed in section 10.1, the action situation and the actors together form the action arena. The action situation includes the seven characteristics discussed hereunder.

*Set of Participants*

The set of participants refers to the actors involved in the bus reform process. To understand the extent to which institutional structures have influenced the reform, the actors refer to the stakeholders involved in the policy formulation, planning stages, and implementation until the 3rd July 2011. These were discussed in sub-section 10.1, and were illustrated in the organigram (Figure 10.2).

*Positions filled by participants*

The positions filled by participants, described together with the relevant actors, are in sub-section 10.1. The Prime Minister, Minister of Infrastructure Transport and Communications, Head of Secretariat, and Policy Managers represented the political aspect, as they had the political power to implement the reform. The four members of the Transport Strategy Directorate, together with professionals from Halcrow Group Ltd were the consultants who provided advice regarding the policy making and planning of the reform.

TM was the regulator of the bus service, which eventually regulated the bus service operated by Arriva Malta. The regulator's role was to provide the necessary infrastructural works and traffic management required to implement the reform.

MEPA was the authority responsible for providing the full development permits for the infrastructural projects linked with the reform that was to take place. Government entities, such as the Land Department, and the Finance Ministry, were crucial for the acquisition of land for interchanges, and funding for constructing the necessary infrastructure.

*Set of allowable actions and linkage outcomes*

The set of allowable actions represents the means that participants had to achieve particular outcomes in the bus reform context (Ostrom 2005). For instance, the actors that had political power were able to implement the reform.

This characteristic is associated with another two characteristics that compose the action situation, the *potential outcomes linked to individual sequence of actions*, and the *level of control each participant has over choice*. The decisions made by the actors influence the outcome, that is, the implementation of the reform.

Once the reform was decided upon, the selected consultants had to provide the necessary information for the reform to take place. Their output included suggestions and the actors with political power had to decide whether to proceed with them or not.

The regulator was bound to provide the necessary infrastructural and traffic management. Its outcome depended on the availability of funding, permissions by other entities, and the capability of developers to implement the infrastructural works.

MEPA and government entities contributed towards the smooth implementation of the reform. Refusal of planning applications from MEPA's side meant that the project would be delayed while disagreement on ownership of land with the Land Department would stall the project. Similarly, a lack of funding or halting the funding process (as happened - see Chapter 4, sub-section 4.11.1) would influence the reform negatively.

*Information available to participants*

Information is described as common information that is available to all actors about the situation (Ostrom 2005), in this case, the reform. Some information may vary, but access to basic information is necessary (Ostrom 2005).

The basic information in this context was that the bus service reform was going to take place. Information to the key stakeholders required to implement the reform was made available during meetings with the relevant stakeholders and was generally disseminated through the political actors to the relevant stakeholders, including the regulator, MEPA, and the government entities.

The political actors were aware of all the necessary information for the reform to be implemented. Examples of such information included necessary permit applications, who the operator would be once the bidder was selected through competitive tendering, and the agreed routes on which to provide the bus service.

The consultants were aware of the necessary technical and strategic information required for the bus reform to operate. Examples of detailed information was the bus stop locations, bus routes, contract details, and changes to the network following consultation.

*Costs and benefits of actions and outcomes*

The costs and benefits of actions and outcomes are the external incentives and deterrents of the situation, that is, the reform (Ostrom 2005). These costs and benefits influence the choice of the participants regarding specific actions (Ostrom 2005). MEPA giving the go ahead for development permits regarding major interchanges, such as Valletta, is an example of an incentive.

An example of a deterrent was the lack of funding available to continue with the infrastructural projects. The Ministry of Finance was not able to provide further funding

in 2013 to continue with the infrastructural works for bus priority measures, as another general election was due in that year (Chapter 4, sub-section 4.11.1). Stalling of funding hindered the reform and potentially affected Arriva's operations negatively. Negative impacts could be indirect, such as the bus getting stuck in traffic congestion, and led to the timing issues that resulted from the reform.

### 10.1.3 Rules and Project Classification

The rules and project classification are explained in Chapter 5, sub-section 5.6.3. Table 5.13 (Chapter 5) provides the concept of how the rules are combined with the project classification.

To recapitulate, the rules are closely linked with the characteristics of the action situation and the actors, which compose the action arena (Ostrom et al. 2014).

- The boundary rule is also known as the entry/exit rule. These are the rules that influence whether actors contribute to the project, and the conditions they must meet to leave the project.
- The position rule refers to the actors' role in the project, that is, their specialised tasks.
- The authority rule refers to the actor (which can be an individual or a corporate entity) that assigns actions to the particular actors on their specialised tasks.
- The scope rule refers to the aim of the project; it affects the potential outcomes, and it is linked to these outcomes.
- The aggregation rule includes the level of control that an actor with specialised tasks has in decisions that require agreement.
- The information rule affects the actors' knowledge about the project.
- The payoff rule affects the incentives and deterrents of the project (Ostrom et al. 2014).

There are four project classifications (Hijdra et al. 2015), and in the context of this research, the project is the bus reform.

- Agenda setting refers to processes determined by accurate specifications of context and desired outcomes.
- Programming refers to descriptive sequences of steps.
- Planning is interpreted as the specific tasks to be completed within each phase of the project.
- Implementation is the activities done in phases or at once (Boal & Bryson 1987).

The seven classification rules are adapted for the bus reform, and are evaluated across the four classic stages that are used in projects (Hijdra et al. 2015). Each stage of the project (the reform), where relevant, is discussed in association with each classification rule. This analysis of the classification rules is summarised in Table 10.4.

*Stage 1: Agenda setting*

The general election of 2008 determined the actors. In this case, it was the Nationalist Party, which was in government. Following that, the Prime Minister set the agenda in principle for the bus reform. He did so by selecting the Minister of Infrastructure Transport and Communications, who worked on the concept of the bus reform.

The Minister of Infrastructure Transport and Communications was in a position to decide the agenda for his ministry. This agenda followed EU requirements. In particular, there was one main EU requirement regarding transport: as a member state of the EU, Malta had to reduce emissions. Thus, the minister's agenda was to reform the bus service for people to shift modes from car use to bus use, and hence contribute to reduce emissions.

Therefore, the scope was to meet EU requirements, and reduce emissions. With that principle scope, the reform would improve the bus service, remove the liberalised monopoly, bind the bus operator with a contract, reduce subsidies, and encourage modal shift.

The minister presented the bus reform as a national project to the Cabinet Committee for National projects. The document "Public Transport in Malta. A vision for Public Transport which fulfils public interest in the context of environmental sustainability" (Ministry of Infrastructure Transport and Communications 2008), which was originally

a White Paper. It was the formal document that provided information to the Cabinet Committee together with a Cabinet memorandum. The Committee gave approval for the bus reform to go ahead.

If the reform were successful, that is, obtaining a modal shift from car use to bus use, and reducing emissions, that would indicate that the government was able to implement the project within the short timeframe of one legislature (five years). This feat had never accomplished during the previous three decades by the various governments, ministers, and Prime Ministers. Consequently, expectations soared, and the stakes were high.

*Stage 2: Programming*

The bus reform was the responsibility of the Minister of Infrastructure Transport and Communications, and his ministry. As soon as the bus reform was given the go ahead, the minister assigned the tasks to the Head of Secretariat, who in turn, delegated tasks to the policy manager.

The Head of Secretariat, with the consent of the minister, set up a team of transport professionals to start the process for the bus reform. Weekly meetings were held with the working committee. Different stakeholders (actors) were invited to the meetings depending on the meetings' agenda, for instance, the Director of Land Department, concerning acquisition of land.

The scope was to produce a contract that would bind the operator to provide the bus service for 10 years. This contract formed part of a tender document, which followed the competitive tendering approach. Given the restricted market in Malta, the call for tenders was competition for the market at a European level.

*Stage 3: Planning*

The team of transport professionals who were seconded to MITC, and Halcrow Group Ltd were working together with the project manager and the Head of Secretariat to plan the network. There was constant liaison with the relevant authorities (e.g., MEPA and TM) and other governmental stakeholders (e.g., Land Department) for land acquisition and the approval of permits.

Different levels of stakeholders were involved. Some stakeholders' input was crucial for the implementation of the reform (e.g., MEPA), and these were constantly informed and

updated. Other stakeholders, such as the PTA, were involved in separate meetings at ministerial level.

The public, the PTA, and other NGOs were further informed at the conference held in December 2008 (Table 10.3). Next, public consultations were carried out in March and April 2009 (Table 10.3). These consultations provided feedback about the reform, sometimes leading to changes in the route network as required by stakeholders, such as local councils.

*Stage 4: Implementation*

In late 2009 and early in 2010, two of the selected transport professionals left the team to develop further their professions. The consultants from Halcrow Group Ltd, by this time, had provided the required services. This meant that the team working on the technical and strategic aspects of the reform was reduced to two professionals from TM, the projects manager from the ministry, and the Head of Secretariat. Final decision-making depended on the Head of Secretariat and the minister.

Following consultations and political decisions, the network and bus stops that were to be implemented in the reform changed several times. Apart from designing the network, the government was in charge of implementing the necessary infrastructure for the operator to operate the service. The infrastructure involved EU funded projects to build and re-design new interchanges and bus stops, and both to upgrade and to build new bus priority lanes. The government also launched a brief marketing campaign about the new service before signing the contract.

Eventually, as indicated in Table 10.3, the expression of interest was published in July 2009 to identify interested bidders from around Europe. Later, in October 2009, the tender document was issued.

Arriva Malta consortium won the bid. In August 2010 (Table 10.3), the contract was negotiated between the operator and the regulator. The main points of the negotiations regarded the redesigning of the routes, and the related subsidy, which depended on the network. These were presented in a press conference that launched the agreed terms (MITC 2011). Arriva bid for a subsidy of €10.25 million, and the negotiated amount was €6.2 million; the subsidy had to be bound for 10 years. The network increase was of +34% on mainland Malta, and +38% in Gozo (Ministry of Infrastructure Transport

and Communications 2011). The IT system cost Arriva €7 million and was supposed to provide real time information to TM, information to passengers on each route, online, and on SMS (MITC 2011). Further information about the promised service is available in Chapter 4, section 4.10.

If Arriva provided the promised bus service, this would have been a win-win situation for Arriva Malta and the government; the operator would gain patronage and make a profit, and the government would have achieved modal shift and adhered to EU requirements on emissions.

Table 10.4 The rules of the IAD Framework Approach as adapted to the project classifications for the Malta bus reform

| Rule | Agenda Setting | Programming | Planning | Implementation |
|---|---|---|---|---|
| Boundary (Entry and exit) | Elections determine the actors. Once the political party wins the election, the Prime Minister appoints the minister. The Ministry responsible for the bus reform was the Ministry of Infrastructure Transport and Communications (MITC) | Ministerial staff were appointed by the Minister. The Head of Secretariat was in charge of the bus reform. | The authorities involved were the Malta Environment and Planning Authority (MEPA) and Transport Malta (TM). | Four transport professionals were selected from Transport Malta to work at MITC. Halcrow Group Limited were commissioned as consultants. Stakeholder involvement was carried out before the reform took place. The bus operator (Arriva Malta) was selected through competitive tendering |
| Position | The minister decided the agenda for the ministry, following also EU requirements | The bus system was the responsibility of the MITC | Authorities were determined by two acts: MEPA – Environment and Development Planning Act (2010), and TM – Authority for Transport in Malta Act (2009). | The project team was selected by the Head of Secretariat and the Minister |
| Authority | The Minister proposed the project to the Cabinet Committee | Preparation of White Paper, "Public Transport in Malta. A vision for Public Transport which fulfils public interest in the context of environmental | The selected group of transport professionals and Halcrow Group Limited worked on the proposed changes. Stakeholders were involved at a later stage in December | Stakeholder meetings were held and changes to proposed plans were carried out according to requirements. Issue of expression of interest (July |

| | | | | |
|---|---|---|---|---|
| | | sustainability" | 2008 | 2009) and tender (October 2009) |
| Scope | Having a policy for a new bus system that encourages modal shift from car use to bus use | The result was a 10-year contract to operate the bus service in Malta | The outcome was the White Paper, which served as the policy document to implement the bus reform | The government designed the network and had to implement the infrastructure for the operator to operate the bus service |
| Aggregation | Cabinet committee voted to decide whether the project would proceed | Following cabinet approval the Minister decided to set up a team to start the bus reform | The team of professionals designed and planned the network in collaboration with Halcrow Group Limited. Stakeholders were informed afterwards and changes continued to be done up to the signing of the contract | Government was in charge of infrastructural improvements; the operator – Arriva Malta was in charge of the operations, network planning (after contract signing) and marketing |
| Information | The White Paper was presented to Cabinet as a formal document, together with a Cabinet memorandum | Weekly meetings were held among the working committee, and other stakeholders were invited to the meetings depending on the topic discussed e.g., Director of Land Department, concerning acquisition of land. | Same as programming (weekly meetings were held among the working committee, and other stakeholders were invited to the meetings depending on the topic discussed); final decision depended on the minister. Information session on the White Paper held with all stakeholders and the public (December 2008) | Stakeholder meetings were done with local councils and the National Commission for Disabled Persons. Government started a brief marketing campaign illustrating the network as designed before the operator made further changes |
| Payoff | Political gain from the potential success gained by the bus reform – if modal shift from car use to bus use happened | Cabinet determined the prioritisation of projects on a national scale. | Funding for infrastructure from the government and EU funds. Approval of permits. | Same as payoff for planning (funding for infrastructure from the government and EU funds). Arriva Malta increase bus patronage, and the government achieves modal shift and reduces emissions. |

### 10.1.4 IAD Framework Approach - Discussion

In the IAD Framework Approach, institutions are a set of prescriptions and constraints that humans use to organise all forms of structural interactions (Ostrom 2005). As seen from section 10.1 institutions are influenced by organisations and by the individuals that form part of the organisations.

IAD analysis comprises two main parts, namely, the action arena and the rules, which are linked. The action arena consists of actors (the stakeholders) and the action situation. The latter set the context where the actors performed while rules included the set of interactions involved amongst the actors in the context of the reform, and were analysed through project classification.

The institutional analysis shows that reform was complex in the set of interactions involved at the decision-making, planning, and implementation stages. The political champion was a key actor for the reform to be implemented, as political decisions deriving from consultations affected the network. Potentially, this could have played a role in the reform outcome.

The timeline of the reform was relatively short (Table 10.3). It was meant to be designed and implemented, and to have achieved success within a legislature (5 years), an institutional vision that can be described as ambitious.

This ambitious aim meant that political decisions were not easily modified. Such an approach meant that the preferred method to include high interest but low power stakeholders (Bryson 2004), such as bus users, was through public consultation. Thus, public participation was not the selected method of including and sharing information about the reform.

Furthermore, some aspects, that it was not in the Minister of Infrastructure Transport and Communications' power to change, led to stalling and had a negative influence on the project. The original network designed by government was changed with the signing of the contract, and not all development applications acquired immediate permission from MEPA. Later on, EU funding for infrastructural projects ceased because of an approaching general election.

## 10.2 Evaluation of the Policy Documents

This section refers to the second part of the policy analysis (Table 10.1). The policy documents are evaluated using Bardach's (2012) criteria (discussed in Chapter 5, sub-section 5.6.4). The five criteria are explained in Table 5.15 (Chapter 5), and include efficiency, equity, freedom, process values, and problem solution. The policy documents (listed in Table 5.14 (Chapter 5) and Table 10.5) are the *"Structure Plan of the Maltese Islands"* (Structure Plan), the *"Public Transport in Malta. A vision for public transport which fulfils public interest in the context of environmental sustainability"* (White Paper), *"Accessible Public Transport Infrastructure Policy, Design Guide"* (Design Guide), and the *"Structure Plan for Environment and Development"* (SPED).

To recapitulate on the descriptions provided in Table 5.15, efficiency refers to the benefits that the public would enjoy with the implementation of the policies. Equity refers to the provision of accessibility to all segments of society (as discussed in Chapter 2). Freedom considers the availability of free markets, economic freedom, and freedom from government control, but emphasises safety, security, equality of opportunity, and empowerment of workers. Process value includes stakeholder involvement. Finally, problem solution evaluates whether the policy solves the target problem to an acceptable degree.

This analysis focuses on the policy documents that led to the bus reform, namely, the Structure Plan, the White Paper, and the Design Guide. Reference is made only to the SPED as the policy document that supersedes the Structure Plan. In the analysis, it is only included where necessary. This analysis was performed prior to the demerger of MEPA. Table 10.5 lists the issues identified in each of the policy documents. In Table 10.5, N/A means that the theme was not specified in the policy document.

Table 10.5 Issues mentioned in the four policy documents

| Policy Documents | | Structure Plan of the Maltese Islands | Public Transport in Malta. A vision for public transport which fulfils interest in the context of environmental sustainability | Accessible Public Transport Infrastructure Policy, Design Guide | Structure Plan for Environment and Development |
|---|---|---|---|---|---|
| **Year** | | **1990** | **2008** | **2009** | **2015** |
| **Institution Responsible** | | **MEPA** | **TM** | **TM** | **MEPA** |
| **Issues by theme** | Operation | Need of innovative, market oriented bus operation, including relevant changes to ownership structure, and competition policy | Remove exclusivity of rights to operate | N/A | N/A |
| | Customer Experience/Time | Eliminate passenger overload, cut waiting times, and improve reliability | N/A | N/A | N/A |
| | Time/Fare | Understand profitable services/times | N/A | N/A | N/A |
| | Fare | Increase revenue from tourists | N/A | N/A | N/A |
| | | Improve payment system | N/A | N/A | N/A |
| | Network | Improve the network | Improve network planning | N/A | N/A |
| | Interchange | Minimise interchange | N/A | N/A | N/A |
| | Subsidy | Include subsidy | Provide an efficient government subsidy | N/A | N/A |
| | Fleet | Improve fleet | Change bus fleet to comply with EU emission standards | N/A | N/A |
| | Infrastructure | Efficient operation of buses, including bus priority lanes | N/A | Improve infrastructure for easy access to board the bus, including bus priority | N/A |
| | Driver working conditions | N/A | Improve working conditions for bus drivers in accordance with EU regulations | N/A | N/A |
| | Information | N/A | Provide information to customers | Improve bus stop flags, poles and timetable display, include passenger transport information | N/A |
| | Enforcement | N/A | Include and enforce regulation | N/A | N/A |
| | Customer Care | N/A | N/A | Improve design | N/A |

| | | | | | |
|---|---|---|---|---|---|
| | | | | standards at bus stops | |
| | | N/A | N/A | Design bus stops that are accessible for all types of mobility | N/A |
| | Data | N/A | N/A | N/A | Increase bus patronage |
| | Service quality | N/A | N/A | N/A | Improve level of service |

There is a distinction in the way MEPA considered public transport issues (Table 10.5), the SPED, for example, takes a holistic approach (Malta Environment and Planning Authority 2015). The concept includes identifying eight key issues (socio-economic development, environment, climate change, travel patterns, urban areas, rural areas, coastal zone and marine area, and Gozo) and aiming to improve them. Where the inclusion of public transport is necessary, it is mentioned briefly.

In contrast, the White Paper is specifically dedicated to the bus service. This change in the method of addressing issues shows a shift in the institutional input, indicating that TM established its role as the regulator of public transport with the White Paper.

MEPA established a more high-level strategic approach. In fact, the themes assigned to the SPED issues (Table 10.5), ‘data’, and ‘service quality’ were generic. This holistic approach implies that as an institution MEPA was reinforcing its status as an authority above TM, as illustrated in the organigram (Figure 10.2).

The Design Guide complemented the White Paper; it focused on improving infrastructure, information, and customer care (Table 10.5). Although there was a gap of 18 years between the Structure Plan and the White Paper, similarities can be seen regarding, operation, network, subsidy, and fleet (Table 10.5). Some of them had partly been addressed under the PTA (with the 1995 agreement, Chapter 4, Section 4.8), and needed additional improvement, such as the subsidy and the fleet. On the other issues, however, nothing had been done for nearly two decades. Additionally, the White Paper introduced three issues: driver working conditions, information, and enforcement. The White Paper and the Design Guide show that TM had a more practical role in implementing these policies.

The policy document evaluation proceeds with sub-sections 10.2.1 to 10.2.5. Each sub-section includes a discussion based on the criteria as shown in Table 10.6. Where possible, the evaluation is done across the four policy documents.

Table 10.6 A description of the Policy Document Evaluation Sections

| Section | Section Title | Description |
|---|---|---|
| 10.2.1 | Efficiency | Benefits enjoyed by the public |
| 10.2.2 | Equity | Accessibility |
| 10.2.3 | Freedom | Safety, security, opportunity, and empowerment to workers |
| 10.2.4 | Process Value | Information |
| 10.2.5 | Problem Solution | Solution of the target problem to an acceptable degree |

### 10.2.1 Efficiency

Efficiency is associated with bus service quality, which is a factor that, as discussed in Chapter 2, section 2.8, influences bus use (Wall & McDonald, 2007, dell'Olio et al., 2011, Rohani et al., 2013). Thus, the quality of the bus service is a major feature that contributes to public interest.

*The Structure Plan of the Maltese Islands*

Table 10.5 indicates that the Structure Plan included two of the pre-defined bus service quality characteristics used in this research (time and fare). The other issues that influence the efficiency of the bus service include customer experience, operation, network, interchange, fleet, and infrastructure. Each of these issues was addressed in the relevant policies (PTR 1 to PTR 14), listed in Table 10.7. In the Structure Plan, policies were assigned a code, e.g., PTR 1. In this document, instead of TM, the regulator of public transport was still known as the Public Transport Authority.

Table 10.7 Public Transport Policies, Structure Plan of the Maltese Islands

| Policy | Brief Description |
|---|---|
| PTR 1 | Drawing up of plans by the Public Transport Authority to rationalise ownership and regulation of the bus industry, for the operation of a bus service that generates revenue |
| PTR 2 | Purchasing of appropriate bus fleet for all types of mobility and that suits the Maltese type of climate and infrastructure |
| PTR 3 | Demand studies set by the Public Transport Authority to redesign services, frequencies, and fares. Include new links to the network |
| PTR 4 | High speed public transport to serve the Valletta/Floriana peninsula, including the possibility of multi-modal systems |
| PTR 5 | Inclusion of interchanges for multi-modal systems |
| PTR 6 | A review of the fare collection and ticketing system by the Public Transport Authority and the bus operators to speed up boarding times, eliminate fraud, and |

| | |
|---|---|
| | increase revenues |
| PTR 7 | An improved bus terminus in Valletta |
| PTR 8 | New major developments to include access to the bus service |
| PTR 9 | Improve waiting conditions and shelter at bus stops |
| PTR 10 | Inclusion of a park-and-ride system in the Valletta Local Plan |
| PTR 11 | Identifying suitable locations for maintenance of the bus fleet |
| PTR 12 | Inclusion of open top buses and road trains for tourists |
| PTR 13 | Regulation of fare structure, operation, and regulation of taxi services by the Public Transport Authority |
| PTR 14 | Extend and rationalise non-scheduled modes of public transport, such as minibuses; establish a car-sharing scheme. |

The Structure Plan's policies were both visionary and strategic; indeed, some of them have not been implemented to date (e.g., PTR 4 and the car-sharing scheme in PTR 14). Other policies are not directly linked to the bus service (e.g., PTR 5, PTR 12, and PTR 13). Although similar to its superseding document (SPED), it is strategic and has more detailed policies than the SPED. However, in both the Structure Plan and the SPED, detailed objectives are missing.

The Structure Plan, nevertheless, addresses efficiency; customer experience and comfort are reflected in PTR 9, regarding waiting conditions, and time is addressed in PTR 3 and PTR 9. The policies regarding fare include PTR 3 and PTR 6.

PTR 1 addresses the bus service operation; this was only implemented with the reform, twenty years later. Similarly, PTR 3 sought an improvement in the network, and this was applied in the reform.

PTR 5 refers to the inclusion of interchanges for multi-modal systems. This policy does not address the issue mentioned in the Structure Plan to minimise interchanges (Table 10.5). Indeed, contrary to what was stated in the Structure Plan, the White Paper included an increase in interchanges in the bus network.

Bus priority was listed in a policy that forms part of Traffic Management TEM 7. This included the set-up of bus priority lanes. Subsequently, throughout the years, three bus priority lanes were introduced, and another three were added following the reform.

PTR 3 indirectly refers to the subsidy. This was introduced in the 1995 Agreement with the PTA (Chapter 4, section 4.8). However, later, the reform aimed to reduce the subsidy (Chapter 4, section 4.9).

The bus fleet started to improve with the inclusion of Euro III vehicles under the PTA. This continued to improve with the introduction of Euro V and VI vehicles after the reform. This implementation addressed PTR 2. PTR 11 was addressed in the reform, when the fleet became the property of the operating company.

*Public Transport in Malta. A vision for public transport which fulfils public interest in the context of environmental sustainability*

In the White Paper, efficiency is addressed by the factors 'network', 'subsidy', 'fleet', and 'information'. This policy document is written in an inclusive manner, where most of the aims are written in the first person plural, 'we', a writing style that instils a responsibility in the reader to participate in making a change. This document was used in the information session carried out in December 2008 (sub-section 10.1.1).

The points that described the required changes were brief. For example, the point regarding the network indicated that it was being designed by TM, and that afterwards, the PTA would be consulted.

Another point regarded the need to reduce the subsidy. It was described as a source of income increase for the bus drivers and owners. It was decided that a subsidy would be provided only to operate unprofitable bus routes and to make the service affordable for all segments of society.

The bus fleet needed to change. The new fleet had to be accessible for the Maltese infrastructure, and be environmental friendly by reducing emissions.

Furthermore, information was listed as a necessity; it had to be available in all forms, particularly through IT.

*Accessible Public Transport Infrastructure Policy, Design Guide*

The Design Guide provided detailed information of how information could be displayed. This included drawings and dimensions of bus stop flags, timetable displays, and passenger transport information regarding additional services near main bus stops. This document also included specifications for designing bus priority lanes, including bus lanes, bus only streets, priority junctions, and protection at bus stops.

### 10.2.2 Equity

Accessibility is a measure of equity (Lucas 2012, Martens et al. 2014, Bastiaanssen et al. 2014). It is represented by three themes (from Table 10.5): 'network', 'interchange', and 'enforcement'.

Each theme is defined according to the literature discussed in Chapter 2, sub-section 2.8.1. The network refers to the opportunities provided by the bus service for bus users to reach their destinations easily. Interchanges also influence the physical opportunity to access the service, because the more frequently a bus user changes buses to reach the destination, the more time is spent changing vehicles and commuting. Enforcement (Chapter 2, sub-section 2.10.4) ensures that the bus service is provided according to the agreed contract and addresses illegalities, such as double-parked vehicles not blocking access along the bus network.

Policy PTR 3 in the Structure Plan referred to the inclusion of new links in the network. Similarly, the White Paper referred to the introduction of a new network. This implied that bus users would have more opportunities to access destinations.

In the Structure Plan, interchanges were considered as an issue, and it was decided that these had to be reduced in number. Policy PTR 5, however, refers to the inclusion of interchanges between different modes of transport. The policy encourages multi-modality, which can lead to an increased accessibility. The White Paper does not specifically mention interchanges; nevertheless, the network designed by Transport Malta (Chapter 4, Figure 4.7) shows that the new system entailed several interchanges to reach a destination.

Enforcement was mentioned only in the White Paper. This issue regarded TM, which as the regulator had never acted, as an enforcer over the PTA. However, this situation had to change. Enforcement would ensure that the bus service work properly; hence, bus users would have access to it.

### 10.2.3 Freedom

Freedom in this research is best described by safety and security. Opportunity is another factor that can be linked to it, through freedom of accessibility. In this manner, the bus service provides its users the opportunity to reach the destination. None of the four

documents specifically includes policies or issues related to freedom. The possible reason for this omission is that institutions take this concept for granted.

Another factor that is included with the description for freedom is empowerment to workers. Only the White Paper refers to the need to improve the working conditions of the bus drivers.

### 10.2.4 Process Value

Process value refers to information (Chapter 5, Table 5.15). The policy documents, as such, do not relate public transport policies to the provision of information. Indeed, the Structure Plan (published in 1990) was available before the concept of stakeholder involvement was introduced in Malta.

Regarding the White Paper, the consultation took place following the publication of the document. Consequently, stakeholder involvement was considered necessary only to implement the policies, and not for the drafting of the policy document. Similarly, the Design Guide was endorsed by the National Commission for the Disabled after it had been prepared.

Process value is best described through the theme of information. Information is only referred to in the White Paper and the Design Guide; the White Paper emphasised that the public should be informed about service updates, and the Design Guide provided detailed illustrations including dimensions of how information should be made available on bus stops and in major interchanges.

### 10.2.5 Problem Solution

Problem solution is described as whether the policy solves the targeted problem to an acceptable degree (Bardach 2012). The government's target problem was increased car use and related air pollution. As a result, the government decided that this problem would be solved overnight by introducing the bus reform. Considering that the aim of the solution was shifting from car use to bus use, the policy was unsuccessful.

To understand further the problem solution, it is necessary to understand Bardach's (2012) argument. According to Bardach (2012), policymakers select one method for implementing a policy and proceed with it. However, policymakers tend to overlook the evaluation of policies; hence, they do not consider alternative policy outcomes before

implementing a policy. The result is that issues arise, which are experienced and perceived by different stakeholders. This becomes a recursive cycle, because the outcome affects people's behaviour and policy.

If different scenarios were identified and evaluated with respective policy outcomes, the reform might possibly have been different and slower. Furthermore, as long as such projects become politicised, they are likely to be criticised by the parties who are in opposition, as indeed happened (Chapter 4, sub-section 4.11.2). Repercussions from politicising such projects would probably be experienced irrespective of the chosen operational methods, whether they were implemented within a short or a long timeframe. While politicians are key stakeholders for a project such as the bus reform to take place, their involvement would ideally not go further than that. Institutions should ideally act as independent agencies that target problems and help in solving them.

### 10.2.6 Remarks on the evaluation of the policy documents

Objective 8 sought to understand the extent to which policy influences the bus service reform. In this section (10.2), policy was evaluated through the relevant policy documents.

There is a distinctive difference in all the documents. The SPED was strategic, and generic, and the Structure Plan was strategic but detailed with regard to the types of policies. Both the SPED and the Structure Plan were a product of MEPA, whose role was above all other authorities, including TM.

The White Paper was a document that served to introduce the bus reform, and it was written in an inclusive style. This informative document eventually became the bus policy document.

The Design Guide was a policy document that provided infrastructural information, and served as a supporting document to the White Paper. The target audiences were the regulator and the operator.

During the time between which the Structure Plan and the White paper (1990 – 2008) were prepared, policy implementation was random and rare. This situation was the result of institutions having other agendas, rather than addressing public transport. Additionally, the disagreements between the PTA and the different governments acted

as barriers for change to happen. The White Paper served as a trigger for change in this regard.

The White Paper included new concepts that were not mentioned in the Structure Plan; these were the provision of information, driver working conditions, and enforcement. Interestingly, security was not included in any of the policy documents. This implies that this factor was not considered as an issue in the bus service.

## 10.3 Discourse Analysis – Transport Professionals

Objective 9 targets the last part of RQ5. It seeks to identify how transport professionals evaluated the bus service reform. The discourse analysis for this population sample focuses on the nodal points (the themes, in bold), the discursive practice (how different transport professionals refer to the reform in various ways), and text (particular words or grammar being used for emphasis or there being a substitution of words).

Eleven transport professionals agreed to participate in the semi-structured interviews. Attempts were done to contact senior management from Arriva, and Halcrow's consultants who worked on the bus reform. The former did not reply, whereas the latter were on duty elsewhere, and their contribution would have been too late for the thesis timeline. The policy makers included transport professionals E1, E2, E3, and E8; E11 represented the regulator, and E4 to E7 the operator. The bus drivers were E9 and E10.

### 10.3.1 Policy makers

Policy makers E1 to E3 worked on the bus reform while policy maker E8 worked on the nationalised service after Arriva had left Malta. Regarding **time**-related issues, the transport professionals varied in opinion.

> *"Arriva's main flaws … reliability and punctuality…" (E1)*

The former three policy makers were somewhat defensive of the Arriva service, and justified these problems.

> *"Customer satisfaction factors all … have improved dramatically... but reliability and punctuality always top the list of any service…" (E1)*

> *"It is reasonably reliable… Dropouts may be cause for complaint but not for hardship…" (E2)*

*"People's perceptions of timeliness…" (E3)*

During the nationalised service, the government launched a public consultation for people to voice their concerns (Bajada & Titheridge 2016). E8 referred to what people wanted following Arriva: *"greater frequency"*.

Policy makers acknowledged that the reform raised people's **expectations**.

> *"When they put up the expectations of the people… they were reflecting what was in the contract… It wasn't the government really pushing expectations to make political gain; it was pushing what was written in black and white for the operator to deliver." (E1)*

> *"There was a very high expectation of a very good service to be deployed." (E3)*

Policy maker E8 recognised that raising people's expectations would require meeting them, and E8 enhanced the importance of being cautious when working on a project such as the bus service.

> *"You start doing things slowly; you do not create high expectations." (E8)*

Policy makers observed people's negative opinion; they blamed different factors that led to the negative opinion regarding the reform. Policy maker E1 attributed the public's negative opinion to the **media**.

> *"There was a concerted effort particularly through the press to destroy an operator. The media played a huge role…" (E1)*

However, policy maker E2 described the reform as a *"policy earthquake"*, and further stated,

> *"There was the…political opportunity for the then opposition to exploit the negative aspects of that earthquake politically, then that opposition became a government."*

E2 continued to explain the three factors that influenced the reform

> *"First…serious operational short-comings in the preparation by the bus operator for the start of the service in 2011…Arriva squandered the public good will that there was in the lead up to the reform and, worse, they seemed to actively pursue people's frustrations…there were many things that should have been there on the first day of the service that were not there by the last day that they (Arriva) were here, and that were fundamental for the actual idea to work…Secondly … from the government's side, it was over-*

*ambitious… Thirdly, the opposition exploited the political opportunity…" (E2)*

Policy maker E3 mentioned the problem of the **articulated vehicles** catching fire.

*"I wouldn't say arson, I don't know, I've never seen the report (maintenance report), but maybe they were somehow…occurring at a time that was opportune." (E3)*

E1 mentioned two other issues that contributed to the negative impact of the reform: **infrastructure** and **parking**. Infrastructure was associated with the operator's ability to drive the buses on the Maltese narrow roads.

*"It's a road engineering exercise, whether the bus goes through a place or not…"*

Parking problems were linked with lack of **enforcement**

*"Would Arriva have asked the police to remove illegal parking in Mrabat Road and enforce parking regulations…?"*

10.3.2 Regulator

The stakeholder that represented the regulator (E11) was frank, and evaluated the reform with an open mind. E11 mentioned **expectations**.

*"I am trying to be diplomatic here, but at the same time, I will say what I feel … I think July 2011, the expectation of the average passenger was raised to a limit that potentially could not be achieved, which means we raised high expectations in a manner that people thought that on the 3rd of July they would go out and everything would be working. And that was not a reality. I mean, it can't work. It can't be." (E11)*

E11 mentioned the **failure** of the reform. According to E11, this outcome resulted from the overnight implementation of the new bus service.

*"When you change a number of variables with a public that has been accustomed to a system, and all of a sudden, you tell the public, 'Listen, you have new drivers, new routes, different new buses…' It was too much to digest. Apart from this, unfortunately, the system didn't function from day one, which means that did not help matters."*

E11 also mentioned the **achievements** of the reform. These included **bus driver** working hours, low floor **buses**, and **patronage** increase.

*"The driver does not work sixteen hours a day…We've got over that hurdle. That we have low floor buses, we've got over that hurdle. This*

*means that there are a number of things that we have achieved…the passenger numbers increased, it could be in the tourist area…which if you compare with before, there was nothing…" (E11)*

### 10.3.3 Operator

There were four stakeholders representing the operator. E4, E5, and E7 worked with the PTA, with Arriva Malta, and with the nationalised service, while E6 was an employee of Arriva Malta and the nationalised service.

These stakeholders highlighted the detachment that they experienced as employees from their foreign managers. E4 and E5 mentioned the **failure** of the reform.

*"There wasn't a transitionary time, so that clients, people, passengers got used to it. That worked against Arriva." (E5)*

*"We were working with Arriva from before, which means that Arriva started on the 3rd July, but we had been working with them since January (2011). As from February, we were already feeling a failure coming. We were already involved, we already knew that there wouldn't be enough bus drivers, we knew that the routes wouldn't work. But that was the reform." (E4)*

E7 mentioned the difference in the **operational methods** between the PTA and Arriva.

*"We (PTA) were used to, for instance, if a bus stops, we use another one. They (Arriva) seemed like they didn't have (buses). We had a lot of stand-by buses… They seemed not to care. They worked so that time passes by, and if it doesn't,[pass by] it isn't their problem. They hurt the people." (E7)*

### 10.3.4 Bus drivers

Transport professional E9 was a bus driver with the PTA, with Arriva and with the nationalised service, while E10 was a bus driver with the latter two. Both bus drivers mentioned the problem regarding lack of **information** for the customers. They added that people, even customers who are habitual users of the bus service, ask them many questions.

*"An individual uses the bus for Haz-Zabbar every day, and every day he asks whether you pass through Fgura…" (E9)*

*"They ask me a lot, There are people who use the service every day, and they still ask." (E10)*

Another problem linked to service quality mentioned by the bus drivers was **comfort**. This was associated mainly with the crowded buses, and not being able to control people boarding and alighting the bus.

> *"We had 3 doors, people alighting from the back, people boarding from the front, others boarding from the back. It was impossible to control. We put one way stickers on the doors…but they were useless." (E9)*

> *"You (the bus driver) don't have control of them (people), especially in Sliema; you have control over nothing, even with one door, because you're serving people, and at the same time, others board, and you don't know whether they have the ticket." (E10)*

E9 observed differences between the PTA and Arriva **bus driver working conditions**. These included the bus driver rotation, working hours, salary, and people's perception towards the bus drivers. To E9 the situation was better under the PTA.

> *"It was better like it used to be before (the reform): one bus, being driven by one driver. The driver would know the problems related to the bus, and the bus wouldn't be driven by seven drivers, some pushing the accelerator, one way, and the others another way." (E9)*

> *"Before I used to work one whole day, I used to wake up at 4 a.m. At times, I used to finish work at 3 p.m., at times at 4 p.m., or at 11 p.m... Nowadays I wake up at 4 a.m. and finish work at 3 p.m. I work 8 hours. I'm happy if I take it more relaxed rather than all the time (as happens now); the mind doesn't work properly in the end. It affects the outcome." (E9)*

> *"The salary was worse under Arriva than under the PTA…" (E9)*

> *"Under the PTA, we never heard that a bus driver got punched…to be able to punch a bus driver…these people make us aggressive – we're not becoming aggressive, we're keeping it cool. Even if there is an accident with the bus…you immediately see it on Facebook. With the PTA, we used to have accidents, but they weren't reported as much as with Arriva." (E9)*

Both bus drivers mentioned the **rivalry** between cars and buses on the road.

> *"Everyone wants to pass; no one gives the right of way. They see you with the truck, and they try to press you. For instance, getting out of the bus stops in Marsa… I'm on the second stage, he (car driver) is coming from Blata l-Bajda, and you see him honking his horn and gas down so that you don't exit." (E9)*

*"Small cars don't like us, especially since Arriva started… As soon as people see us, they are frightened…and we are always in the wrong for them." (E10)*

Both bus drivers mentioned **traffic congestion** as a major problem for the bus service.

### 10.3.5 Summary of Findings on Discourse Analysis

Transport professionals included policy makers, regulators, operators, and bus drivers. Their evaluations of the reform differed, and their discursive practice varied in the aspects that concerned them. For instance, policy makers mentioned expectations, the service level agreement, and politics, while bus drivers mentioned aspects that were more practical, for example, the problem related to information and comfort, and their salary.

Policy makers E1, E2, and E3, who participated in the reform, were somewhat defensive of the reform. This was particularly evident from text used by E1, such as *"dramatically"* and *"always top the list"*. These phrases suggest that E1 made an effort to minimise the issue of time and highlight the positive aspects of the reform and that E3 insinuated that the articulated vehicles caught fire for a purpose when mentioning *"arson"*.

Regarding expectations, E1 proudly mentioned that expectations translated what was listed in black and white in the contract, which was *"onerous"*. Conversely, E8 emphasised that caution is necessary in order not to raise people's expectations.

Other differences in text refer to the reform as a policy tool. For example, E2 referred to it as the *"policy earthquake"*. This term suggests that the reform needed to be implemented as it did for it to have an impact. E11 (the regulator) agreed that the reform was necessary because several *"hurdles"* were overcome. Nevertheless, E11 mentioned the *"failure"* of the reform. The operator (E4 to E7) also mentioned the *"failure"*.

## 10.4 Discussion – Bus Policy and the Reform

RQ 5 comprised three parts: to identify the extent to which institutional structures influenced the bus reform, to identify the extent to which relevant policy influenced the bus reform, and to identify how transport professionals evaluated the bus reform. For these three parts, three analytical methods were used. The first method was the IAD Framework Approach (Kiser & Ostrom 1982). This method of analysis was evaluated

with four classic stages used in projects and was inspired by Hijdra et al.'s (2015) work. The policy documents were analysed using five evaluative criteria (Bardach 2012), and for the transport professionals' evaluation of the reform, discourse analysis was applied (Chapter 5, sub-section 5.6.2).

The political agenda and political will were crucial for the reform to be implemented. This finding supports Marsden and May's (2006) argument, who also mentioned the right institutional structure and flexible funding. In Malta's case, the latter two contributed to influencing the reform negatively, and while the political agenda was crucial, eventually it also worked against the reform. The main issue with the political agenda was that the bus reform was a national project that had to be planned and implemented in a relatively short time; indeed, the project had to be up-and-running within a legislature (five years).

The approach taken by government and the short timeframe meant that stakeholder management was crucial. Stakeholder involvement varied, depending on who government decided were the key actors for the reform to be implemented. Other actors who in the politicians' perspective might influence the reform negatively were consulted when the concept was at an advanced stage. This situation led to what is described as hearing but not listening (Conrad et al. 2011).

The short timeframe in which the reform was planned and implemented contrasted with the bureaucratic processes of institutions. A case in point was planning permits not being issued on time, and the freezing of EU funding. Hence, the institutional structures and funding (Marsden & May 2006) had a negative effect on the reform. Policy maker E2 admitted that government was *"ambitious"* in implementing the reform. This comment leads to the next issue, which developed from the reform: regulatory capture.

Regulatory capture is described as politics acting in the interest of the few to favour political agendas (Laffont & Tirole 1991). The government's ambitious plans to implement the reform overnight led to this issue. To reach their goals, politicians marginalised particular stakeholders, for instance, bus users, by not involving them in public participation from the start. Yet, ultimately, these stakeholders were the actors who experienced the resultant bus service on a daily basis.

Another group of stakeholders crucial for a bus service are bus drivers (Ida & Talit 2015). Bus drivers are at the forefront of the bus service, but findings suggest that they are not given the required importance by institutions. Bus drivers E9 and E10 mentioned characteristics that are important for the day-to-day operations of the bus service, e.g., information, comfort, and rivalry on the road, and their comments imply that follow up by the regulator and operator on the provision of bus service quality is necessary, and enforcement is crucial for a bus service.

The literature suggests that institutional reform is necessary before regulatory reform takes place (Gibson 2010). Institutions that were crucial for the policy to be implemented, such as MEPA and TM, experienced changes. The problem was that the changes within these institutions did not allow the entities to settle down, and in some instances, it took a long time (e.g., the time between the Structure Plan and the White Paper - 18 years), for the policies to be implemented.

The evaluation of the policy documents indicated that these documents were related and were dependent on the institutions that prepare them. If the strategic vision of the institutions did not include the policy that was written, the latter did not take place. The organigram in Figure 10.2 suggests that the institutions relied on political agenda, which affected the way forward.

The discourse analysis of the policy makers who participated in the reform reflected the sentiment of the institutional structures involved in the bus reform. These policy makers mentioned expectations with pride: *"Expectations reflected what was written black on white…"* (E1). E2 mentioned that government plans were *"ambitious"*, but blamed the opposition (E2) for influencing negatively people's perception, and E1 accused the media of undermining the reform.

The policy maker in charge of the nationalised service (E8) was very cautious not to raise people's expectations, while the regulator (E11) mentioned that the reform served as a lesson to implement projects slowly. However, despite referring to the reform as a failure, E11 also mentioned some achievements from the reform. This observation supports White's (1997) argument that a policy that produces more negative than positive outcomes is generally a poor policy.

The operator (E4 to E7) mentioned the issue of the dearth of dialogue between foreign management and local employees; the former were not listening to what the latter were saying: *"As from February, we were already feeling a failure coming… But that was the reform."* In E7's words, *"They (Arriva) seemed not to care"*. This finding suggests that dialogue is crucial even within institutional structures.

Another crucial component which E11 (the regulator) mentioned in passing was data. E11 said, *"The passengers numbers increased; it could be in the tourist area…"*. However, the regulator was not sure why the numbers had passengers increased. This uncertainty implies that data were not being gathered. While the literature states that monitoring and benchmarking are crucial to ensure adequate operator performance (Hensher et al. 2003, Randall et al. 2007, Trompet et al. 2013, Kavanagh 2016), the regulator's comment implied that these were not a priority for the regulator.

This chapter has concluded the analytical part of this dissertation. Chapter 11 closes this research with the discussion and conclusion.

# Chapter 11 Discussion and Conclusion

This research has explored the complexity of reforms by looking at the impact that one particular bus reform had on behaviour and policy. Hence, while other research has focused on specific aspects of reform separately, this research has targeted behaviour and policy in one study. The aim was to explore the dynamics involved in a reform process and to understand the impact of reform on the synergies involved. The case study was the Malta bus reform that took place in July 2011.

A conceptual model was proposed to understand the interaction involved between the reform, behaviour, and policy. The proposed model comprised an adaptation of the Theory of Planned Behaviour (Ajzen 1991), and the Capability Opportunity Motivation, and Behaviour Model (Michie et al. 2011). These models were adapted as explained in Chapter 3, and were combined to create the conceptual model used to explore the impact of bus reform.

## 11.1 Discussion

Five research questions were set, and each one was linked to parts of the conceptual model. Each research question is discussed in the subsequent sections.

### 11.1.1 RQ1 - How did attitudes, perceived confidence, capability, and opportunity influence the intention to use the bus before and after the reform?

RQ1 was addressed in Chapter 7, section 7.1. The objective of this research question was to focus on intention and to see which factors influenced Maltese residents' and tourists' intention to use the bus both before and after the reform (Chapter 5, sub-section 5.3.1).

The research method applied to answer RQ1 was the questionnaires conducted with Maltese residents and tourists before and after the bus service reform (Chapter 5, sub-section 5.4.4). Data were gathered in a cross-sectional manner to identify the intentions of Maltese residents and tourists at two single points in time. The first time was one

month before the reform, and the second time was one year afterwards. In this manner, it was possible to take a snapshot of the two population samples in two different instances.

Intention in this research is interpreted as goal intention, which leads directly to bus use, and implementation intention, which refers to the planning and consideration required to have the intention to perform the behaviour (Chapter 3, sub-section 3.6.2). The literature shows that intention is the antecedent of behaviour (Gärling et al. 1998, Steg 2005, Ajzen 2006, Bamberg et al. 2007). As stated by Ajzen (2006), however, the intention to do the behaviour does not always mean that the behaviour is implemented.

Intention is influenced by a multitude of factors depending on context and population segments. Different studies have shown that intention is influenced by several factors, such as social norms (Heath & Gifford 2002, Chen & Chao 2011), and PBC (Anable 2005).

To measure the factors that in the conceptual model (Chapter 7, Figure 7.1) link with intentions, several variables were used. These variables included age, gender, service quality, occupation, and location. For opportunity, additional variables included perceived time taken to reach destination, preferred bus stop distance, and preferred number of bus connections. Location was measured through distance origin and destination for Maltese residents, and for tourists through distance origin. For tourists, the variables reason for visiting, length of stay, and accommodation replaced the variable occupation, used for Maltese residents. Existing mode use was included as an additional variable because it was assumed that the mode that the participants generally used might influence their intentions to use the bus.

Maltese resident bus users were assumed to continue using the bus. Hence, the analysis was performed on Maltese resident non-bus users. The findings show that for Maltese resident non-bus users, attitudes towards bus service quality and perceived confidence in using the buses influences the intention to use the bus. Before the reform, the attitudes were associated with security, and after the reform, the attitudes were associated with information and impact on the environment.

Maltese resident non-bus users who thought that before the reform, security was nearly the best and the best (42%) did not intend to use the bus. Interestingly, this finding

contrasts with the literature, which states that security is an important factor for voluntary travel behaviour to take place in bus use (Taylor 2007). If people have negative evaluations on security, the bus service is not used (George 2003), but in this case, people had positive evaluations about security, and still did not intend to use the bus. This finding suggests that security is not a deciding factor that influences intention to use the bus.

Information is a crucial factor for a bus service (Lyons et al. 2001, Eagly & Chaiken 2007, Paulley et al. 2006). This statement is confirmed by the findings. Positive evaluations of information led to the intention to use the bus after the reform.

Buses are more environmentally friendly modes of transport than the car (Heath & Gifford 2002, Hess 2007). The findings tallied with the literature, as 64% of Maltese resident non-bus users who intended to use the bus post-reform had positive evaluations of the impact on the environment.

Tourists generally intended to use the bus pre- and post-reform (Chapter 7, Figure 7.2). Even tourist bus users intended to use the bus pre- and post-reform. This finding has two implications. The first implication is that the tourists are captive bus users, and the second implication is that the tourists who participated in the study had a positive experience; hence, they intended to use the bus if they returned to Malta.

The literature states that bus use is associated with people under 17 years old and senior citizens (Enoch et al. 2003, Goodwin & Lyons 2010). In the conceptual model (Chapter 7, Figure 7.1), age is a variable that measures attitudes, perceived confidence, and capability of using the bus. For tourists pre- and post-reform, all age groups had the intention to use the bus. This finding implies that being a tourist, irrespective of age, means there is a tendency to intend to use the bus. Probably, this happens as long as attitudes are positive (as shown in the findings for ‘time’, ‘customer care’, and ‘impact on the environment’ – Chapter 7, Figure 7.9 to Figure 7.11) and tourists have a perceived confidence and are capable of using the bus.

Regarding opportunity, the tourist population sample showed that intentions to use the bus are associated with preferences for one bus connection (69%, pre-reform). Post-reform, 39% of the tourists who intended to use the bus preferred zero connections, and 48% preferred one bus connection. This finding is similar to what is available in the

literature. Drew and Rowe (2010) stated that an increased number of interchanges within the same mode of transport increases travel times. As described in Chapter 4, sub-section 4.10.2, the number of interchanges increased with the reform. Probably, tourists who experienced a number of interchanges considered them as obstacles that hindered their opportunity to reach their destinations.

The results on reported service delivery (Chapter 7, sub-section 7.1.1) by tourists suggest that the experience of using the bus increases the intention to use it. Furthermore, the findings from the tourists' population sample - 54% of tourists who agreed that Arriva had met their expectations intended to use the bus - are similar to the literature that states that if the experience of a bus service exceeds the expectations of its customers, then the latter would be highly satisfied (Stradling et al. 2007).

The different population samples and sub-groups showed that intentions vary. Intentions to use the bus are associated with positive experiences, expectations that are met, positive attitudes, perceived confidence towards bus use, and capability to use the bus. These findings mostly emerge from the tourist sample. The Maltese sample indicated that non-bus users would intend to use the bus depending on their attitude towards its service quality. As discussed by Ajzen (1991), however, intention does not necessarily translate into behaviour.

### 11.1.2 RQ2 – How did the bus reform change attitudes and perceived confidence regarding using the bus?

The second research question was addressed in Chapter 7, section 7.2. This research question had three objectives (2 to 4, Chapter 5, section 5.3.2). The questionnaires before and after the reform to Maltese residents and tourists were used to answer RQ2.

RQ2 is associated with the conceptual model in Chapter 7, Figure 7.1, where attitudes and perceived confidence can directly influence bus use. In this case, attitudes and perceived confidence are measured mainly through service quality.

Objective 2 was to identify the influence of mode use on the bus service quality ratings before and after the reform. Before the reform, bus users' and non-bus users' responses indicated agreement that 'fare' was the best bus service quality characteristic. This finding is comparable to the literature, which in addition to stating that fare was rated positively (Attard 2013), found it was the cheapest in Europe (Attard 2005).

After the reform, Maltese resident bus users considered customer care as nearly the best and the best. Both bus users and non-bus users rated comfort positively. These findings suggest improvements in the bus service, which supports Attard's (2013) results.

Regarding the tourist population sample, those participants who experienced the bus service after the reform generally rated it positively (Chapter 7, sub-section 7.2.1). Negative opinions by tourist bus users post-reform increased regarding time and security. These findings suggest that timing issues, such as reliability and punctuality, led to a negative attitude. Negative opinions about 'security' were probably associated with the driving speed of the bus drivers and thefts on board the bus.

Objective 3 was to identify demographic components that influence the ratings of bus service quality. Attitudes and perceived confidence are also measured with age and gender (Chapter 7, Figure 7.1). For Maltese residents before and after the reform, the demographic components did not affect their opinions of the bus service. For tourists, however, age influenced their attitudes and perceived confidence towards bus use. The young age groups 11-20 and 21-30 and the elderly age groups 51-60 and 60+ mostly rated 'time' negatively.

Objective 4 was to explore characteristics that portray attitudes and perceived confidence towards bus use. Factor Analysis was used to define an underlying structure (Hair et al. 2014) that portrays attitudes towards the bus service.

Pre-reform, the Maltese residents' evaluation of the bus service indicated that this population group was influenced by 'luxury', which was interpreted as a commodity that users and non-users seek for in a vehicle, and 'availability', which was interpreted as the provision of opportunities to reach destinations, existing both as a network and with information for people to use it. Further analysis using Kruskal-Wallis tests and Mann-Whitney U tests revealed that 'availability' was associated with bus use. This finding concurs with the literature (Andreassen 1995, Joewono & Kubota 2007), and suggests that availability of the bus service is important for bus users.

The latent variable produced by the Factor Analysis post-reform for the Maltese residents' population sample was 'bus service'. The definition applied to this label was the bus service system viewed holistically because of the implemented change. Further analysis showed that 'age' was associated with the bus service. Hence, because age is a

measure of attitudes and perceived confidence, these factors influenced bus use post-reform. The results show that the statistically significant age groups were 31-40 and 60+.

Pre-reform, the latent variable for the tourist population sample was labelled 'accommodating'. The interpretation of 'accommodating' is a bus service that suits tourists' needs. Further analysis indicated that before the reform, the age groups 51-60 and 60+ found the bus service accommodating. This finding suggests that attitudes and perceived confidence towards bus use were positive.

The Factor Analysis for tourists post-reform suggests that the bus service provided negative experiences. This interpretation derives from the resultant two latent variables. The first one is 'endurable', which is considered as a bearable bus service in terms of economic, social, and environmental factors. The second latent variable is 'unreliability', which is interpreted as an untrustworthy service influenced by time, information, and accessibility-related issues. Further analysis indicated that the elderly age groups, 51-60 and 60+, and the 41-50 age group were influenced by whether the service was endurable. The younger age groups 11-20, 21-30, and 31-40 were influenced by the unreliability of the bus service.

The bus reform affected the attitudes and perceived confidence of the population samples differently. Tests of association indicated that the reform led to some improved service quality characteristics. In-depth analysis, however, revealed that for Maltese resident bus users of the working age group (31-40) and the dependent age group (60+), the reform influenced their attitudes and perceived confidence to use the bus. Regarding tourists, the older age groups endured the reformed bus service, and the younger age groups were influenced by its unreliability.

### 11.1.3 RQ3 – How did the bus reform influence capability and opportunity to use the bus, and thus, bus use?

RQ3 was answered in Chapter 8. The relevant parts of the conceptual model that are addressed by the research question are highlighted in Figure 8.1 (Chapter 8). The questionnaire datasets were used to answer RQ3, and multinomial logistic regression was used to analyse the data. RQ3 had one objective, objective 5, which was to identify how the reform influenced capability and opportunity to use the bus.

Capability was measured by the variable ‘age’, and for Maltese residents, opportunity was measured by ‘gender’, ‘occupation’, ‘service quality’, and ‘location’ (district origin and destination), while for tourists, location was measured by the variable ‘district origin’, and ‘occupation’ was replaced by variables that are linked with tourists, such as ‘length of stay’, ‘accommodation’, and ‘reason for visiting’. As explained in Chapter 3, section 3.7, other variables that were used to measure opportunity included ‘perceived average time taken to reach destination’, ‘preferred bus stop distance’, and ‘preferred amount of bus connections’.

The findings indicate that, overall, opportunity influenced bus use. For the Maltese residents’ population sample, the bus service reform led to an increase in both bus use and car use. The former was slight, only 2%, and the increase in the latter was 16%. This finding implies that the reform did not achieve its aim of modal shift. Regarding the tourist population sample, bus use increased by 14% post-reform.

Before the reform, the positive attitudes towards fare increased the likelihood of using the bus. For Maltese residents, when compared to professionals, students and unemployed persons used the bus, hence the preference for a favourable fare structure. Post-reform, when compared to travelling to the Northern Harbour District, Maltese residents were less likely to use the bus for all the other districts. Furthermore, when compared to professionals, post-reform, students, people working in elementary occupations, and the elderly were more likely to use the bus. These findings concur with the literature. Low fare structures (Potter & Enoch 2001, Paulley et al. 2006) means people in occupations that have a low income and students tend to be bus users (Balcombe et al. 2004).

Pre-reform, compared to tourists who stayed in a 3-star hotel and were hired car users, tourists staying in guesthouses were more likely to use the bus. After the reform, using the same reference category (3-star hotel, hired car users), tourists staying in other accommodation (e.g., a friend’s house) were less likely to use the bus. This finding implies that tourists might have obtained lifts from friends.

Capability only influenced bus use in the tourist dataset post-reform. Compared to the 41-50 age group, after the reform, young, young adult, and elderly tourists were more likely to use the bus. This finding supports the findings answering RQ2, objective 4.

Hence, post-reform, capability, attitudes, and perceived confidence might have influenced tourists to use the bus.

### 11.1.4 RQ4 – After the reform, what were the effects (of social norms) on attitudes, perceived confidence, and intention to use the bus?

Chapter 9 answered RQ4, and the relevant part of the conceptual model was illustrated in Figure 9.1. RQ4 had two objectives associated with it; objective 6 was to identify the impact of the bus reform on social norms, and objective 7 was to identify the extent to which social norms influence attitudes, intentions, and perceived confidence to use the bus. Social norms are difficult to measure, but expectations are good indicators of this factor (Bamberg et al. 2003, Bamberg & Schmidt 2003). Although social norms are subjective and difficult to analyse, the findings provided an interesting insight showing differences between the two population samples.

For this study, social norms are interpreted as what is normal practice. The latter refers to typical activities done by specific groups of society, such as bus users. Individuals identify themselves with such groups, and follow what these groups normally do (Chapter 3, sub-section 3.6.2).

Qualitative data through semi-structured interviews to Maltese residents and tourists were used to answer RQ4. Subsequently, discourse analysis was applied to the data.

The pre-reform social norms for Maltese residents and tourists were identified, in order to achieve objective 6. For Maltese residents before the reform, the norm was to have a car and accept that there would be traffic congestion. In addition, it was normal to experience peer pressure that would influence car use. Furthermore, pollution was associated with traffic congestion and fumes from the PTA buses while bus drivers' negative attitudes influenced negatively customers and car users. The laid-back Mediterranean attitude led to a lack of motivation to improve the bus service.

Return tourists were able to observe Maltese daily practices pre-reform. They considered the old buses as a characteristic of Maltese culture. Tourists referred to rivalry between buses and car users; they observed traffic congestion and associated it with excessive car use. Tourists also observed that the road infrastructure needed improvement.

The reform had different influences on the social norms of the two population samples. Maltese residents had high expectations that the reform would improve the traffic congestion, pollution, bus drivers' attitudes, and car use. However, the reality of the reform outcome was different from what was promised (Chapter 4, section 4.10). This resulted in distrust in the new bus service, which even led previous bus users to shift to car use.

Tourists did not have expectations, and they seemed to visit Malta with an open mind. Instead of criticising the bus service, they justified issues associated with accessibility (Chapter 9, sub-section 9.3.2).

Objective 7 addressed the extent to which social norms influence attitudes, intentions, and perceived confidence to use the bus. For both Maltese residents and tourists, social norms seemed to influence attitudes towards the bus service quality. Factors that were slightly improved after the reform still needed improvement; for example, with comfort, the air-conditioning was sometimes very cold, and there was a problem of overcrowding on the bus. There were also negative comments regarding time, information, and accessibility.

Regarding intention, the findings suggest that social norms do not influence the intention to use the bus. These findings support Anable's (2005) work, which indicated that social norms are not the main factor that influences intention. Intention to use the bus appeared to be influenced by the service quality characteristics, particularly 'time'.

The two population samples showed differences in how their social norms influenced their perceived confidence to use the bus. Social norms for Maltese residents were affected by peer pressure to use the car; they were negatively judged if they used the bus. Maltese residents' perceived confidence was also influenced by service quality. For example, time-related issues influenced negatively the Maltese residents' perceived confidence.

For tourists, it was normal to use the bus. They believed that their ability to use the bus was beneficial in economic and environmental terms.

### 11.1.5 RQ5 – To what extent did institutional structures and relevant policy influence the bus service reform as a policy tool, and how did transport professionals evaluate the bus service reform?

RQ 5 was answered in Chapter 10, and three objectives (objectives 8 to 10) were associated with it. Figure 10.1 (Chapter 10) shows the relevant parts of the conceptual model that are linked with RQ5. As explained in Chapter 3, sub-section 3.6.1, policy has three interpretations. It refers to the process involved to solve the problems associated with increased car use – the bus reform as an intervention for behaviour change; it refers to institutional structures, and relevant documents that lead to the reform; and it refers to policy change.

For RQ5 secondary data included online information, relevant policy documents, and the researcher's role in the bus reform as contributing insider knowledge. In addition, institutional structures were analysed using the IAD framework approach (Kiser & Ostrom 1982) and the policy documents were analysed using Bardach's (2012) evaluative criteria.

Objective 8 was to understand the extent to which institutional structures influenced the bus service reform as a policy tool. The findings show that such structures had an impact on the reform. The minister in charge was the political champion for the policy to take place. However, further political decisions combined with contractual negotiations with the selected operator affected the network. The reform was planned in a relatively short period of three years, and was implemented overnight. This meant that political decisions were not easily modified. Nevertheless, aspects that were not in the political champion's power, such as the stalling of EU funding, influenced negatively the reform.

These findings concur with Marsden and May's (2006) argument that the success of a bus service, such as that of London, was due to the right institutional structures, coupled with flexible funding and a strong political champion. The findings from this research imply that if one of these ingredients does not work properly, the result will be negative.

Objective 9 was to understand the extent to which policy influenced the bus service reform. Policy was influenced by the relevant institutions that prepared it, and changes in these institutions led to delays in policy implementation. Policy implementation was

above all influenced by the governments' agendas. The reform was waiting to take place for nearly two decades; the political champion was a key protagonist to prepare the relevant policy document and implement it in a short time.

Objective 10 was to identify how transport professionals evaluated the bus service reform. This objective was addressed through qualitative data derived from semi-structured interviews conducted with transport professionals, which were analysed using discourse analysis.

In all, 11 transport professionals were interviewed. These included policy makers, the regulator, the operator, and bus drivers. The latter referred to practical problems associated with information and comfort. They experienced and had to deal with the issues that the participants evaluated negatively after the reform. This finding supports Ida and Talit's (2015) argument that bus drivers are at the forefront of the bus service, and should not be ignored.

The policy makers who participated in the reform were rather defensive of it, and sometimes showed pride in their work. Policy maker E8, who was responsible for the bus service after Arriva Malta opted out of the contract, emphasised the importance of caution when dealing with expectations.

The regulator described that with the reform, several obstacles experienced in the PTA bus service were overcome. However, overall, the reform was a failure. Indeed, the operator (who included Maltese employees who worked with Arriva and the PTA) described the reform as a failure. These findings tally with White's (1997) argument that a policy that produces more negative outcomes than positive ones is in general a poor policy.

### 11.1.6 Critical outcomes from the Malta bus reform

The aim of this research was to demonstrate the complexity of bus reform by showing its impact on behaviour and policy. The outcomes depended on the context used for this case study, namely, geographical, cultural, and socio-economic.

The application of the Malta bus reform on the conceptual model has shown that several factors contribute to the complexity of bus reform. By using theories from social psychology, the conceptual model has highlighted the human interaction element

involved in bus reforms, an element that is not addressed generally in bus reform research. The principle outcome from this research is that human interaction occurs at all levels of the reform process, including institutional structures, policy implementation, and using or potentially using the bus.

The findings showed that there are different dimensions of complexity. Complexity in bus reforms derives from the institutional structures involved in creating the necessary policy documents to initiate the bus reform, and the interactions between institutions, including relevant stakeholders. Further complexity lies in the bus users' and non-bus users' attitudes, social norms, perceived confidence, capabilities, and opportunities and intentions to use the bus.

Synergies occur in different ways and depend on different population groups. In fact, Maltese residents and tourists were two population groups that provided different outcomes.

Maltese residents were strongly influenced by the car-oriented society. Car use is embedded within Maltese culture to an extent that it is normal to use the car, and people are pressured by their peers to start using cars. This situation shapes Maltese culture and was acknowledged by the land use planning institution in 2003 (Malta Environment and Planning Authority 2003). The findings showed that car users find the car convenient, and the policy intervention was not enough to encourage a modal shift. This finding reflects Pronello and Camusso's (2011) argument that the car is the most convenient way to satisfy users' needs and time limitations.

Maltese resident bus users, both before and after the reform, are generally captive users. This sub-group showed more positive attitudes towards the bus service than did car users. Although some of the bus service quality characteristics had improved, such as 'comfort', other service quality characteristics, such as 'time', had major issues. Such problems negatively influenced the captive bus users, who had no other alternative than to continue using the bus.

The literature associates 'age' with bus use particularly because dependent groups use the bus (Enoch et al. 2003, Goodwin & Lyons 2010). The findings from the Maltese residents sample show that in this case, apart from dependent groups, availability of time influences bus use. Discourse analysis further supported the quantitative analysis.

‘Age’ was a variable that represented attitudes, perceived confidence, and capability; hence, the reform affected these factors in the conceptual model. The mixed methods approach revealed that the working age groups had issues with using the bus that were associated with ‘time’, as the reformed bus service was unreliable and not punctual. However, the elderly were described as having enough time available to use the bus service.

Although expectations are subjective, policy makers should pay sufficient attention to them. On seeing the success of competitive tendering in London, and the associated problems with deregulation outside London, Beesley (1991) acknowledged that high expectations were largely unforeseen. Muñoz and Gschwender (2008) also argued that if the performance of the bus service does not live up to the promised and expected service, stakeholders have negative evaluations of it. This is what happened in the Maltese residents’ case, as the government had raised their expectations, but the reform did not contribute to the major change that was expected. Instead, the performance of the reform led to major disappointment and distrust. This research has shown that it is particularly important to consider expectations especially when people have both perceptions and experience of the bus service.

Conversely, the tourist population sample did not have expectations. The discourse analysis revealed that tourists justified the issues that arose. Overall, the quantitative data showed that after the reform, tourists’ attitudes were more positive towards the bus service. This was the case even though the Factor Analysis indicated that for tourists after the reform, the bus service was endurable but unreliable. Discourse analysis further revealed that for tourists, it was normal to use the bus. This was the case especially for tourists who were used to using public transport in their countries. Quantitative analysis showed also that tourists had more intentions to use the bus than had Maltese residents.

Tourists serve as ambassadors who relate their experiences to their family and friends (Jalilvand et al. 2014). In this research, the quantitative analysis revealed that age and accommodation were variables that influenced tourists’ intentions to use the bus and bus use. Hence, tourists were influenced by attitudes, perceived confidence, capability, and opportunity to use the bus. However, although their overall attitudes and intentions were positive, the bus reform did not contribute to ensure an extremely positive

experience. Hence, when tourists return home, they might talk about their experiences of the reformed bus service, which would not always result in good advertising for Malta.

## 11.2 Conclusion

This research showed the complexity of a bus reform regarding human behaviour and policy. Different population samples can have different attitudes, perceived confidences, and intentions; they can also be influenced by varying social norms. Different groups of people can also be affected by various capabilities and opportunities. However, a common aspect to that particular reform is the influence that institutional structures have on the policy documents, and their implementation.

Regarding the human behaviour element, stakeholders are important to consider at the different stages of the reform. Public participation, as opposed to consultation, is a more inclusive approach to understand stakeholders' requirements.

Overall, the conceptual model indicated the importance of acknowledging the fact that a reform has a circular link. It is not linear, because it does not have a starting and end point. The process of a reform, particularly regarding human behaviour and policy is complex, and continuously changing; thus constant updating is necessary at different stages of the reform process.

### 11.2.1 Research contributions

The following points refer to the contributions of this research.

- The conceptual model

Through the conceptual model, the research provided a novel insight into the synergies that are involved in a bus reform and that are influenced by behaviour and policy. By using, adapting, and combining socio psychological models, it was possible to explore the behavioural aspects within a reform context. Additionally, the policy aspect was explored in the context of a bus reform. In this manner, it was possible to provide depth of understanding and explore the wider effects of bus reform.

The conceptual model was a first for bus reform, because it allowed the evaluation of behavioural factors (attitudes, social norms, perceived confidence, intentions, capability,

and opportunities) and policy (institutional structures, policy documents, and transport professionals that contributed to the policy) of two population samples in a before-and-after situation. The importance of this contribution lies in the combination of two aspects, human behaviour and policy, that before were studied separately in a reform context.

- The natural experiment approach

The natural experiment approach provided the opportunity to apply the conceptual model on the case study of Malta. In this case, the reform occurred at a national scale, serving as a spatial laboratory to use the conceptual model and evaluate the impact of the reform on behaviour and policy. The natural experiment applied in a spatial laboratory can be used for more complex systems by being scaled up to larger countries, as well as in similar environments (King 1993, Enoch & Warren 2008).

The case study of Malta contributed further to this research approach. The dynamics of Malta's bus reform, e.g., change in operator and change in government throughout the reform process, showed that the researcher does not have control on the activities involved.

Furthermore, the Maltese case study contributed to additional knowledge regarding bus reforms. Following the chronological timeline described in Chapter 2 Table 2.1, Malta would be the subsequent reform, after Transantiago. The description to Malta's case would be radical with competitive tendering; reported success includes formalised bus industry, and improved service level; reported failures/issues include service level, political, and operational. Regarding the lesson learnt, the main ones would be that the radical approach does not work, political involvement has to be controlled, operators need to understand the local context, and stakeholder participation is essential at all levels of the reform process.

- Discourse analysis

Discourse analysis has been sparsely used in transport research. Despite this scarcity of research where this method of analysis being used, there were varied approaches, including a quali-quantitative approach using Q methodology (Hickman & Vecia 2016) or the purely qualitative approach (e.g., Guiver 2007).

In transport research this is a novel method of discourse analysis. The discourse analysis applied in this research applies a purely qualitative approach, that follows and combines a philosophical approach with a theoretical approach.

The discourse analysis as applied in this research, contributed further to this analytical method in transport research. This analysis used the Foucauldian approach, combined with Laclau and Mouffe's Discourse Theory and Fairclough's Critical Discourse Analysis (Jorgensen & Phillips 2002). Through nodes, text, concepts of identity, and discursive practice, the discourse analysis revealed the reform's impacts on social norms, and to a limited extent, the effect of social norms on attitudes, intentions, and perceived confidence.

- Policy analyses

The policy analyses applied in this research contributed further to policy analysis in transport research. The Institutional Analytical Development Framework Approach combined with stages of project development as inspired by the work by Hijdra et al. (2015) is a first for bus policy. Furthermore, there is a lack of literature regarding the analysis of policy documents in the context of bus reform. The relevant policy documents were analysed using Bardach's (2012) evaluative criteria.

These methods of analyses showed the importance of the role of institutions (through the IAD framework approach) in shaping policies, and implementing them. Additionally, analysis of the policy documents showed that the quality and level of detail of the relevant policy documents reflects the quality of the policies that are implemented.

### 11.2.2 Generalisability

Some of the research findings, explored in section 11.1 are similar to other research findings. Examples of similar findings include how car users find the car convenient, as argued in Pronello and Camusso's work (2011), how age influences bus use (Enoch et al. 2003, Goodwin & Lyons 2010), and how expectations should be met to avoid disappointment by customers (Muñoz & Gschwender 2008). These similarities with other research show that the findings from the case study are applicable to other situations that share the same experiences.

By applying the conceptual model designed in this research to other cases, in-depth understanding and the wider effects of other bus reforms can be identified in similar contexts. The geographic context provides insight into cases that have physical boundaries, such as islands or cities that are located in remote areas or are in mountain regions while the socio-economic context provides insight into cases where there are high population densities with car dependent societies, and with low but growing GDPs that depend largely on the tourism industry. Furthermore, the cultural context provides insight into societies that, apart from being car dependent, experience how peer-pressure plays a role in owning and using a car.

As discussed by Marsden and May (2006), institutional structures are key factors that contribute to successful reforms, as happened in London. The case of the Malta bus reform supported this argument by providing in-depth understanding that institutional structures can negatively affect a bus reform. Hence, the policy part of the model is also applicable to other cases.

### 11.2.3 Recommendations

*Reform as an intervention for behaviour change*

The quantitative and qualitative analyses that answered research questions 1 to 4 showed that the Maltese bus reform was not successful as an intervention for behaviour change. The reform did not have any significant positive impact on bus use, and the number of people using the bus did not significantly increase. The findings showed that the main problems that emerged, such as time-related issues, influenced both the Maltese residents' and tourists' attitudes, perceived confidence, and capabilities and opportunities to use the bus. This was the principle negative output of the reform. Even though the two population samples showed different results on other characteristics, time-related issues negatively influenced both samples.

In this case, there are two recommendations. One is drawn from the comments of transport professionals, who realised that the short-term policy implementation backfired. Probably, if the policy had been set out in stages, and taken at a slower pace, the outcomes would have been more positive.

The second recommendation regards grouping relevant policies together. This recommendation is drawn from comments made by Maltese resident and tourist

interviewees. Hence, in this manner, the reform would have served as an alternative solution to car use, and disincentives, or 'sticks', would have deterred car use. Examples of sticks include charging for parking, as parking is something a number of Maltese residents in the interviews mentioned as being a problem, or the introduction of a congestion charge in other areas outside of Valletta (where it already exists). Maltese residents and tourists acknowledged that traffic congestion was a major problem in Malta. In addition to the reform, other smarter choices should have been included, which would have acted as carrots, for example, employers subsidising the fare to use the bus as one Maltese resident interviewee mentioned.

*Expectations*

The difference in results regarding expectations of Maltese residents and tourists clearly showed that raising people's expectations and then not fulfilling the stated promises negatively influenced people's intentions to use the bus. Both the quantitative and qualitative analyses from the semi-structured interviews illustrated this issue.

Transport professionals who worked on the reform admitted that the expectations were very high, and the policy-maker who was in charge after the reform reiterated several times that expectations should be kept low. Hence, when introducing an intervention such as the bus reform in Malta, it is important to manage expectations; keeping expectations relatively low helps to avoid distrust in the policy being implemented.

*Stakeholders*

In a project such as the bus reform, stakeholders are actors that can make or break the policy. They include the political champion; relevant institutions; bus drivers; the operator and the regulator; bus users, including tourists; and non-bus users.

The institutional analysis showed that a political champion is necessary for a bus reform to take place. There needs to be political will with enough motivation to gain the necessary momentum and keep going. As shown from the institutional analysis, however, politics should not interfere to gain the interests of a few voters, as such interference can lead to regulatory capture.

The recommended manner of reaching out to stakeholders is through public participation at all stages of the project. In this case, the government planned and

created the policy, and stakeholders were consulted. While public participation may mean it takes longer for a project to be implemented, it ensures the inclusion of every stakeholder.

The findings also showed that some institutions (e.g., MEPA) were more powerful than others (e.g., TM). These institutions at times worked against the project, for instance, in issuing the required permits for development. Institutions should ideally cooperate on such policies and should not be influenced by changes in political power, as happened with the freezing of EU funds because of an approaching election.

It is important to consider aspects regarding operational issues. The relationship of the management with its employees should be a healthy one, where both sides have a dialogue and listen to each other. The findings from the interviews with transport professionals showed that the foreign management did not listen to the Maltese employees, who were aware that the reform was going to be a failure.

From a regulatory viewpoint, the regulator needs to be pro-active. It is not enough that, as the interviewee who represented the regulator said, the reform overcame *"hurdles"*, such as having low steps to access the bus or having a fleet that produces lower emissions. Rather, the regulator should address other issues that collectively influence the bus service, such as traffic congestion, illegal parking, and upgrading the road infrastructure.

The interviews with the bus drivers indicate that they are important stakeholders to consider; bus drivers are on the frontline of the bus service, and they experience the same problems as do the bus users. Such problems include not reaching their destination on time because of traffic, or having to deal with customers asking the same questions due to the lack of information provided by the operator.

Finally, but equally important to other stakeholders, bus users, especially captive bus users, should be involved at the planning stages of a bus reform. The basic level of service required by this group should be the top priority of a bus reform.

Additionally, tourists are another important stakeholder group who tend to use the bus. Additional service characteristics, such as more information, should be provided to help this group and avoid them having to ask bus drivers unnecessary questions. This group is particularly important for countries like Malta that depend on tourism.

Another stakeholder group to consider is non-bus users. These are the potential bus users who possibly use the car. Bus drivers and tourists observed that car users see the bus as a rival. Thus, it is recommended that car users be targeted for a cultural change that encourages the acceptance of the bus as another mode of transport. If such participants have positive attitudes, intentions to use the bus, perceived confidence of using the bus, capabilities, and opportunities to use the bus, then they are more likely to use this alternative transport mode.

### 11.2.4 Suggestions to Improve the Bus Service in Malta

Maltese residents' preference to car use leads to practices that encourage the car-oriented society; which has been documented by MEPA (2003) and observed by tourists (Chapter 9, sub-section 9.2.2). Such practices have become a recursive cycle in which priority is given to car users, even from a policy perspective. Although the implementation of the bus reform aimed to mainly obtain modal shift from car use to bus use, several obstacles led to an increase in car use. To this end, radical changes have to be made to improve problems of traffic congestion and associated damage to health, the environment and the economy.

Suggested radical changes involve two broad aspects: a change in social norms and policy packaging. It is envisaged that only in this manner can car use reduce and use of alternative modes of transport, such as bus use, increase. Figure 11.1 shows a flow diagram that can be developed further, in future research, to study and apply the proposed radical changes. Changes to social norms and having institutions working together to design and implement policy packaging is laborious and requires continual monitoring.

As discussed in Chapter 2, sub-section 2.7.3, changing social norms requires a long process. Figure 11.1 illustrates a two way flow between social norms and expectations (which in this research have been selected as a measure of social norms, Chapter 9), and cultural changes, engaging advocates for change and alter discourse.

Radical changes include new cultural practices that encompass policy packaging, which should be ongoing. Policies include education-related, and health-related policies that refer to the use of alternative modes of transport, including active travel and bus use. Associated policies in this package include transport (e.g. safety policies), and social

(e.g. engaging more in the community through the use of alternative transport modes other than the car).

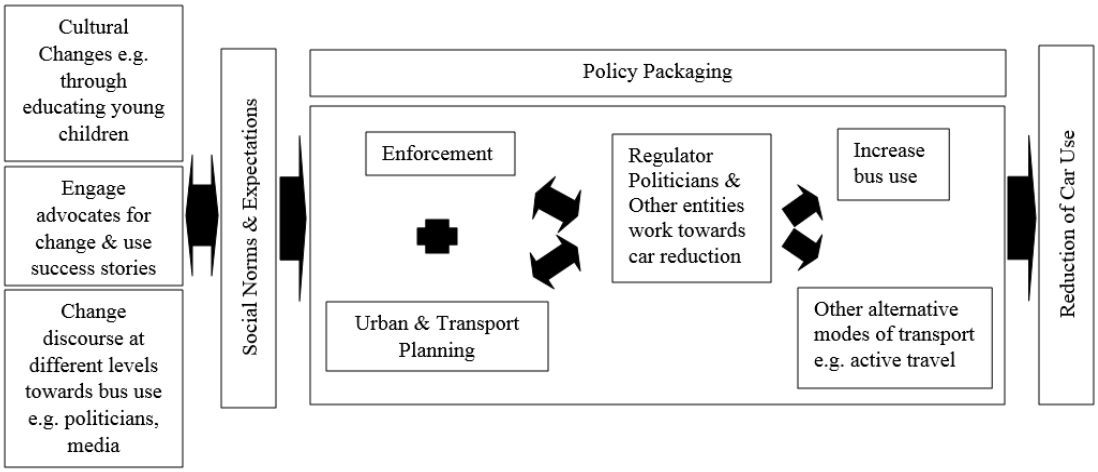


Figure 11.1 Proposed Radical Changes to Reduce Car Use

Standalone policies are, however, insufficient and ineffective. There needs to be a concerted effort on grouping polices in packages that include transport demand management and smarter choices (e.g. green travel planning).

Moreover, effort needs to be applied on factors that influence the policy process (e.g. through the diffusion of innovations model), and policy formulation (e.g. through the application of an advocacy coalitions framework). These two policy approaches are briefly referred to in Chapter 2, sub-section 2.6.3, Table 2.2.

The diffusion of innovations model can be planned and applied to the use of multi-modal transport. In this manner the policy approach would influence education, and norms. Together with this approach there would be a change in discourse, and practice (Figure 11.1). Concurrently, policy formulation can be applied through the advocacy coalitions framework. Stakeholders who are advocates of alternative modes of transport should disseminate their success stories, and engage in politics to apply their beliefs.

Policy packaging should be an on-going process that should be revised continuously. Government bodies, politicians, regulators, and other entities should work together towards reducing car use. Initiatives to reduce car use should be included in enforcement that is applied, together with planning and implementation of integrated land-use and transport planning (Figure 11.1). Such planning should target the increase

of alternative modes of transport, including bus use. Planning and enforcement should be complementary.

The idea presented in Figure 11.1 and briefly discussed in this sub-section is radical for a place like Malta. It is a radical approach, because what is considered as the norm (general acceptance of the use of the car), is proposed to go through changes that involve the norm, in terms of policy making, planning, and society. The proposed approach is not an easy task, but is necessary to break the recursive cycle of car use in Malta.

### 11.2.5 Limitations

Despite a number of constraints involved in this research, the results were statistically significant and compared well to those of other research. Furthermore, the quantitative research findings were robust, and the qualitative analysis supported them.

Research that involves an intervention for behaviour change generally includes a longitudinal study (e.g., Ogilvie et al. 2006). Such studies provide an opportunity to compare the same population sample before and after the reform. In this case, the tourist population sample did not allow a longitudinal study to take place, as it was not practical to carry out a longitudinal study for tourists who might be visiting Malta before the reform, but who would not visit Malta afterwards, and there was no guarantee that the tourists would re-visit Malta. The same issue of practicality led to the choice of a cross-sectional study for both population samples. For Maltese residents, given the limited timeframe to collect the data, there was no guarantee that the same participants would be willing to cooperate both before and after the reform.

Therefore, the cross-sectional study approach was the preferred option. This option allowed quantitative data collection at two snapshots in time, and it was possible to compare, in some instances, between the two different population samples rather than comparing the same population samples across time.

The findings from the case study are restricted to the Maltese case. While case studies are criticised for not being representative of all the cases, as discussed in sub-section 11.2.2, some of the findings were generalisable because they were similar to other research. The advantage with case studies, such as the Malta bus reform, is that in the literature, it is acknowledged that bus reforms offer unique cases, and an in-depth

understanding of them provides lessons from which to learn (Preston 1999). From the findings of the Maltese case study, it was possible to provide recommendations from the lessons learnt (sub-section 11.2.3).

Natural experiments are ideal methods of research in which the researcher cannot control and influence the situation. In this case study, it was not possible to control the outcome of the reform. One such example is that in the middle of the study, Arriva Malta opted out of the contract. Such unexpected changes led to aspects that could not be controlled, and the researcher could not predict such unexpected events. Hence, it was necessary to adjust the research accordingly, which made the research even more interesting.

The research timeframe facilitated an in-depth understanding of the short-term impacts of the reform on behaviour and policy. For instance, it was not possible to analyse in-depth the effects on the nationalised service or the new operator ALESA. Additionally, some behaviour changes and policy changes might take a longer time, which would require a change in social norms, while this research looked at the immediate impacts of the reform on behaviour and policy.

### 11.2.6 Future research

Ideas for future research are drawn from the recommendations and limitations of this research. It is suggested that future research continue what has been started in this research.

The conceptual model can be applied in other reforms and can be used by both regulators and operators; both stakeholders can identify how the reform can influence behaviour and policy. Indeed, operators can refer to how policy influences the service that they provide. A different research approach to the model can be a longitudinal study, where the same people can contribute before and after the change to identify changes within the same population groups over time.

An in-depth and longer study on expectations and social norms can provide further insight into social norms. Additionally, the dotted lines in the conceptual model (Figure 3.2, Chapter 3) can be explored; these lines refer to how attitudes, intentions, and perceived confidence influence social norms. This study can contribute further to what has been suggested in sub-section 11.2.4.

Further research on stakeholders could provide further insights. Such research could include stakeholders in public participation. This might provide insight into how a bus reform that meets users' needs should be performed. Additionally, further research that includes tourists in the context of a bus reform is necessary. Such research could provide further information on this issue. To the author's knowledge, tourists as a population sample in the context of a bus reform have been applied only in this research.

# Appendices

Appendix A Questionnaires

Pre-Reform Maltese residents

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

Index:

This questionnaire is part of a Doctoral research project. The research is about public perception on transport and public transport.

It would be greatly appreciated if you could dedicate six (6) minutes of your time to answer the questionnaire.

The answers will be maintained with the strictest confidence and the questionnaire will be used for research purposes only.

A summary of the results can be sent to you by e-mail, if you would be interested.

---

Hawnhekk mill-Universita' ta' Malta. Qed issir ricerka ghal PhD fuq x'tahseb in-nies fuq it-trasport u s-servizz tal-linja.

Dan il-questionnaire jiehu 6 minuti. Jinteressak tirrispondi?

Ir-risposti ser jinzammu ghall-uzu biss ta' din ir-ricerka.

Jekk jinteressak inkunu nistghu nibghatulek ir-rizultati bl-e-mail.

---

Surveyor Name:

Time:

Date:

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

1. Gender: i. Male ☐ ii. Female ☐
1. Sess: i. Ragel ii. Mara

2. Age/ *Eta'* : i. 11-20 ☐ ii. 21-30 ☐
iii. 31-40 ☐ iv. 41-50 ☐
v. 51-60 ☐ vi. 60+ ☐

3. Under which of the following categories would you classify yourself. Please select **one** (**1**) of the following.
3. Taht liema kategorija tikklassifika ruhek? Jekk joghgbok aghzel wahda (**1**) minn dawn.

i. Legislators & senior officials
i. Legislaturi u ufficcjali imlahhqin ☐

ii. Professionals
ii. Professjonisti ☐

iii. Technicians & associate professionals
iii.Teknici u teknikament professjonali ☐

iv. Clerks
iv. Skrivan/a ☐

v. Service workers & shop & market sales workers
v. Haddiem/a li joffru servizz ☐

vi. Craft & related
vi. Haddiem/a fl-artiggjanat ☐

vii. Plant & machine operators & assemblers
vii. Haddiem/a fil-magni fil-qasam industrijali ☐

viii. Elementary occupations
viii. Okkupazzjonijiet elementari ☐

ix. Armed forces
ix.Forzi Armati ☐

x. Skilled agriculture and fishery workers
x. Imharreg/imharrga fl-agrikoltura u/jew is-sajd ☐

xi. Student
xi. Student/a ☐

xii. Housewife
xii. Mara tad-dar ☐

xiii. Retired
xiii. Irtirat/a ☐

xiv. Unemployed
xiv. Qed infittex xoghol ☐

4. To which town/village (e.g. Valletta) do you travel **mostly** e.g. for work/school or shopping (in case of housewives).
4. Lejn liema belt/rahal (ez. Il-Belt) tmur **l-iktar** ez. Ghax-xoghol/l-iskola jew biex taghmel ix-*xiri (f'kaz ta' mara* tad-dar).

_____

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

5. What is the most frequent type of transport that you use? Please select **one** (**1**) of the following.
5. Liema hu l-*aktar mezz ta' trasport li tuża'? Jekk joghgbok aghzel* **wiehed** (**1**) biss minn dawn li ser insemmi.

| | | | |
|---|---|---|---|
| i. Car (driver)<br>i. Karozza (sewwieq/a) | ☐ | ii. Car (passenger)<br>ii. Karozza (passiggier/a) | ☐ |
| iii. By bus<br>iii. *B'tal*-linja | ☐ | iv. By coach or minibus<br>iv. Bil-kowc jew minibus | ☐ |
| v. By motorbike<br>v. Bil-mutur | ☐ | vi. On foot (more than 5 minutes)<br>vi. Bil-mixi (ghal iktar minn 5 minuti | ☐ |
| vii. By bicycle<br>vii. Bir-rota | ☐ | viii. By ferry<br>viii. Bil-vapur jew id-dghajsa | ☐ |
| ix. By taxi<br>ix. Bit-taxi | ☐ | x. Other means, please specify<br>x. *B'mezz iehor, jekk joghbok ghid x'inhu* | ☐ |

6. What is your average time taken to reach your destination that you **mostly** travel to e.g. work/school or shopping? Please select **one** (**1**) of the following.
6. Bejn wiehed u iehor kemm iddum biex tasal fil-*lokalita' li ghazilt li tmur* l-aktar (issoltu) ez. Gha x-xoghol/skola jew biex taghmel ix-xiri? Jekk joghgbok aghzel **wahda** (**1**) minn dawn li ser insemmi.

| | | | |
|---|---|---|---|
| i. 0 – 15 minutes | ☐ | ii. 16 – 20 minutes | ☐ |
| iii. 21 – 30 minutes | ☐ | iv. 31 – 60 minutes | ☐ |

7.a. (This question refers to respondents who **DID NOT** choose the option **By Bus** in question 5 above.) Would you consider using the bus for frequent use?
7.a. (Din il-mistoqsija tirreferi biss lil min fil-mistoqsija no. 5 ***m'ghazilx b'tal*-linja**.) *Tikkunsidra tuża' tal*-linja ghall-uzu frekwenti?

i. Yes/Iva ☐ ii. No/Le ☐

7.b. Please state reasons for your answer:
7.b. Jekk joghgbok aghti raguni ghar-risposta tieghek:

_____

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

8. Please answer the following question **even** if you are not a bus user. Rate the following set of characteristics according to **what you think** about the **CURRENT** bus service. Tick (✓) the scale provided in the table below; **5** being the **best** and **1** being the **worst**.
8. Din il-mistoqsija tirrifletti ***x'jahseb il*-pubbliku** fuq is-servizz **eżistenti** rigward tal-linja. Jekk joghgbok irrispondi din il-mistoqsija **anke** jekk ma tuzax tal-linja. Ser insemmi karatteristici tipici, jekk joghgbok aghti rata bejn **1 (l-aghar)** u **5 (l-ahjar)** fuq kull wahda.

| | *Scale/Rata* | | | | | |
|---|---|---|---|---|---|---|
| | Worst/ *l-aghar* 1 | 2 | 3 | 4 | Best/ *l-ahjar* 5 | Don't know/ *Ma nafx* |
| Accessibility *Kemm issib is-servizz accessibli/ hafif biex tuzah* | | | | | | |
| Information *Informazzjoni* | | | | | | |
| Time *Puntwalita' u dewmien sakemm tasal fid-destinazzjoni tieghek* | | | | | | |
| Customer Care *Ghajnuna generali ghall-konsumatur* | | | | | | |
| Fare *Noll* | | | | | | |
| Comfort *Kumdita' fuq l-istage u fuq tal-linja* | | | | | | |
| Security *Sigurta' fuq l-istage u fuq tal-linja* | | | | | | |
| Impact on the environment *Impatt fuq l-ambjent* | | | | | | |

9. How far would you consider a bus stop to be within a suitable walking distance from your home?
9. *Kemm tahseb li bus stop ghandu jkun 'l boghod f'distanza ragonevoli mid*-dar tieghek sabiex timxi sa dan il-bus stop?

i. 0-5 minutes ☐ ii. 6-10 minutes ☐
iii. 11-15 minutes ☐ iv. 16-20 minutes ☐
v. 21-30 minutes ☐

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

10.a. Out of the following list please choose what you **consider** the **2 important** factors for a **potentially successful bus service** (**1** being the **most important** and **2** being the **2nd most important**).

10.a. Din il-mistoqsija tirrifletti kif tahseb li ghandu jkun servizz tajjeb tal-linja. Jekk joghgbok aghzel l-aktar **tnejn 2** li tahseb li huma importanti (**1 l-ahjar** u **2 it-tieni l-ahjar**).

| | |
|---|---|
| Accessibility (Easy to use)<br>*Kemm issib is-servizz accessibli/ hafif biex tuzah* | |
| Information (Any type of information for the user)<br>*Informazzjoni* | |
| Time (Punctuality and trip length)<br>*Puntwalita' u dewmien sakemm tasal fid-destinazzjooni tieghek* | |
| Customer Care<br>*Servizz ghall-konsumatur* | |
| Fare<br>*Noll* | |
| Comfort<br>*Kumdita' fuq l-istage u fuq tal-linja* | |
| Security<br>*Sigurta' fuq l-istage u fuq tal-linja* | |
| Impact on the environment (Caused by the service)<br>*Impatt fuq l-ambjent* | |

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

10.b. From the 2 selected factors please rank the following criteria for a **potentially successful bus service**. Tick (✓) the scale provided in the table below; **5** being the **most important** and **1** being the **least important**.

10.b. Miz-**zewg 2** karatteristici li ghazilt, jekk joghgbok aghti rata ghall-kriterji li tahseb li ghandhom jigu ***kkunsidrati f'servizz tal*-linja tajjeb**. Aghti **5 ghall-iktar importanti** u **1 ghall-inqas importanti**.

| **Accessibility** *Accessibilita'* | **Scale/Rata** | | | | |
|---|---|---|---|---|---|
| | Least Important L-Inqas Importanti 1 | 2 | 3 | 4 | Most Important L-Iktar Importanti 5 |
| To reach bus stop (infrastructure) Biex tilhaq il-bus stop (infrastruttura) | | | | | |
| Ease of access on the bus Fuq tal-linja | | | | | |
| Entering/exiting the bus *Biex titla' u tinzel tal*-linja | | | | | |
| Ease of obtaining ticket Heffa biex tixtri n-noll | | | | | |
| Ease of obtaining the most suitable ticket Heffa biex taghzel liem hu l-ahjar noll ghalik | | | | | |
| Network Coverage Jekk ir-rotot ikoprux areas li jaqduk | | | | | |

| **Information** Informazzjoni | **Scale/Rata** | | | | |
|---|---|---|---|---|---|
| | Least Important L-Inqas Importanti 1 | 2 | 3 | 4 | Most Important L-Iktar Importanti 5 |
| Accuracy Precizjoni | | | | | |
| On Stops Fuq il-bus stops | | | | | |
| On Bus Fuq tal-linja | | | | | |
| Updates & Announcements Aggornamenti u avvizi | | | | | |

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

| **Time**<br>**Hin** | **Scale/Rata** | | | | |
|---|---|---|---|---|---|
| | Least Important<br>L-Inqas Importanti<br>1 | 2 | 3 | 4 | Most Important<br>L-Iktar Importanti<br>5 |
| Journey time<br>Kemm idum il-vjagg | | | | | |
| Waiting on the bus stop<br>Tistenna fuq il-bus stop | | | | | |
| Punctuality according to time-table<br>*Puntwalita' skond it*-time table | | | | | |
| Regularity<br>*Regolarita'* | | | | | |
| Frequency<br>Frekwenza | | | | | |
| Reliability of Service<br>Kemm hu affidabbli s-servizz | | | | | |
| Suitability<br>Kemm hu addattat skond il-hin tieghek | | | | | |

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN-NIES FUQ IL-MOBBILTA' U S-SERVIZZ TAL-LINJA***

| **Customer Care**<br>**Servizz ghall-konsumatur** | **Scale/Rata** | | | | |
|---|---|---|---|---|---|
| | Least Important<br>L-Inqas Importanti<br>1 | 2 | 3 | 4 | Most Important<br>L-Iktar Importanti<br>5 |
| Overall company commitment<br>Impenn mill-kumpanija | | | | | |
| Bus driver customer service<br>Servizz ghall-konsumatur min naha tad-driver tal-linja | | | | | |
| Handling customers' concerns & complaints<br>Kif jigu mharsa t-thassib u l-ilmenti tal-konsumaturi | | | | | |
| Staff knowledge<br>Kemm il-haddiema jkunu jafu informazzjoni dwar is-servizz | | | | | |
| Appearance & behaviour<br>Apparenza u mgieba | | | | | |
| Communication with customers<br>Komunikazzjoni mal-konsumatur | | | | | |
| Staff helpfulness<br>Ghajnuna mill-haddiema | | | | | |

| **Fare**<br>**Noll** | **Scale/Rata** | | | | |
|---|---|---|---|---|---|
| | Least Important<br>L-inqas importanti<br>1 | 2 | 3 | 4 | Most Important<br>L-iktar importanti<br>5 |
| Affordability<br>Jekk ikunx irhis jew gholi | | | | | |
| Range of tickets available by time of day<br>*Ghazla ta' prezzijiet differenti ghal* matul il-jum | | | | | |
| Range of tickets available weekly/monthly<br>*Ghazla ta' prezzijiet differenti ghal* perijodi twal bhal gimgha/xahar | | | | | |
| Tickets for socially disadvantaged persons<br>Prezzijiet differenti ghal nies *svantaggjati e.g. anzjani/dizabbilta'* | | | | | |

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

| **Comfort** *Kumdita'* | **Scale/Rata** | | | | |
|---|---|---|---|---|---|
| | Least Important L-Inqas Importanti 1 | 2 | 3 | 4 | Most Important L-Iktar Importanti 5 |
| Level of crowding on the bus *Ammont ta' iffullar fuq tal*-linja | | | | | |
| Seating & personal space Il-post fejn tpoggi u l-ispazju personali | | | | | |
| Driving speed & manner Is-sewqan tax-xufier u l-mod kif isuq | | | | | |
| Vehicle cleanliness Indafa tal-vettura | | | | | |
| Vehicle condition Kundizzjoni tal-vettura | | | | | |
| Lighting facilities on the bus *Facilitajiet ta' dawl fuq il*-vettura | | | | | |
| Lighting facilities on the bus stop *Facilitajiet ta' dawl fuq l*-istage | | | | | |
| Temperature conditions on the bus Temperatura fuq il-vettura | | | | | |
| Temperature conditions on the bus stop Temperatura fuq l-istage | | | | | |

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

| **Security** *Sigurta'* | **Scale/Rata** | | | | |
|---|---|---|---|---|---|
| | Least Important L-Inqas Importanti 1 | 2 | 3 | 4 | Most Important L-Iktar Importanti 5 |
| Freedom from crime Helsien minn kriminalita | | | | | |
| Freedom from accident Helsien minn incidenti | | | | | |

| **Impact on the environment Impatt fuq l-ambjent** | **Scale/Rata** | | | | |
|---|---|---|---|---|---|
| | Least Important L-Inqas Importanti 1 | 2 | 3 | 4 | Most Important L-Iktar Importanti 5 |
| Noise pollution produced by bus Tniggiz minn storbju maghmul minn tal-linja | | | | | |
| Air pollution produced by bus Tniggiz fl-arja maghmul minn tal-linja | | | | | |

11. If you were to use the bus and the route would involve more than one bus connection to reach your destination. How many buses would you consider catching?
*11. Li kieku kellek tuza' tal-*linja u r-rotta tkun tinvolvi iktar minn tal-linja wahda biex tasal fejn tixtieq. Kemm-il tal-linja tikkunsidra tirkeb?

i. 1 ☐ ii. 2 ☐
iii. 3 ☐ iv. 4 ☐

12. List any comments/suggestions on the bus service in Malta.
12. Ghandek xi kummenti/suggerimenti li tixtieq taghmel fuq is-servizz tal-*linja f'Malta?*

_____

_____

Thank you for your time/Grazzi tal-hin tieghek

TOURISTS' PERCEPTION ON MOBILITY AND THE BUS SERVICE

Index:

This questionnaire is part of a Doctoral research project. The research is about public perception on transport and public transport.

It would be greatly appreciated if you could dedicate six (6) minutes of your time to answer the questionnaire.

The answers will be maintained with the strictest confidence and the questionnaire will be used for research purposes only.

A summary of the results can be sent to you by e-mail, if you would be interested.

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Surveyor name:

Time:

Date:

TOURISTS' PERCEPTION ON MOBILITY AND THE BUS SERVICE

1. Gender: i. Male ☐ ii. Female ☐

2. Age:

i. 11-20 ☐ ii. 21-30 ☐

iii. 31-40 ☐ iv. 41-50 ☐

v. 51-60 ☐ vi. 60+ ☐

3. Reason for visiting Malta:

i. Holiday ☐ ii. Business ☐

iii. Education ☐ iv. Other, please specify ☐ _____

4. Length of stay:

i. 1-3 nights ☐ ii. 4-7 nights ☐

iii. 8-14 nights ☐ iv. 15-21 nights ☐

v. 21+ nights ☐ vi. Other, please specify ☐ _____

5.a. Type of accomodation:

i. Guesthouse ☐ ii. Host family ☐

iii. Self-catered apartment ☐ iv. 1-star hotel ☐

v. 2-start hotel ☐ vi. 3-star hotel ☐

vii. 4-star hotel ☐ viii. 5-star hotel ☐

ix. Other, please specify ☐ _____

5.b. In which town/village were you staying? (e.g. St. Julian's) _____

TOURISTS' PERCEPTION ON MOBILITY AND THE BUS SERVICE

6. What mode of transport did you **generally** use while in Malta? Select all that apply (✓).

i. Private coaches ☐ ii. Cycling ☐

iii. Walking ☐ iv. Buses ☐

v. Hired car ☐ vi. Hired motorcycle ☐

vii. Taxis ☐ viii. All of the above ☐

ix. Cycling, walking and buses ☐ x. Other, please specify ☐ _____

7. What was the general average time taken to travel to your destination?

i. 0 – 15 minutes ☐ ii. 16 – 20 minutes ☐

iii. 21 – 30 minutes ☐ iv. 31 – 60 minutes ☐

8. Please rate the following set of characterstics according to the **CURRENT** bus service. Tick (✓) the scale provided in the table below; **5** being the **best** and **1** being the **worst**.

| | *Scale* | | | | | |
|---|---|---|---|---|---|---|
| | Worst 1 | 2 | 3 | 4 | Best 5 | Don't know |
| Accessibility (Easy to use) | | | | | | |
| Information (Any type of information for the user) | | | | | | |
| Time (Punctuality and trip length) | | | | | | |
| Customer Care | | | | | | |
| Fare | | | | | | |
| Comfort | | | | | | |
| Security | | | | | | |
| Impact on the environment (caused by the service) | | | | | | |

9. a. Would you consider using the bus if you visit Malta again?

i. Yes ☐ ii. No ☐

9. b. Please state reasons for your answer:

_____

_____

10. How far would you consider a bus stop to be within a suitable walking distance from your accomodation?

i. 0-5 minutes ☐ ii. 6-10 minutes ☐

iii. 11-15 minutes ☐ iv. 16-20 minutes ☐

v. 21-30 minutes ☐

11.a. Out of the following list please choose what you **consider** the **2 important** factors for a **potentially successful bus service** (**1** being the **most important** and **2** being the **2nd most important**).

| Accessibility | Information | Time | Customer Care | Fare | Comfort | Security | Impact on the environment |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

11.b. From the 2 selected factors please rank the following criteria for a **potentially successful bus service**. Tick (✓) the scale provided in the table below; **5** being the **most important** and **1** being the **least important**.

| **Accessibility** | **Scale** | | | | |
|---|---|---|---|---|---|
| | Least Important 1 | 2 | 3 | 4 | Most Important 5 |
| To reach bus stop | | | | | |
| Ease of access on the bus | | | | | |
| Entering/exiting the bus | | | | | |
| Ease of obtaining ticket | | | | | |
| Ease of obtaining the most suitable ticket | | | | | |
| Network Coverage | | | | | |

| **Information** | **Scale** | | | | |
|---|---|---|---|---|---|
| | Least Important 1 | 2 | 3 | 4 | Most Important 5 |
| Accuracy | | | | | |
| On Stops | | | | | |
| On Bus | | | | | |
| Updates & Announcements | | | | | |

| **Time** | **Scale** | | | | |
|---|---|---|---|---|---|
| | Least Important 1 | 2 | 3 | 4 | Most Important 5 |
| Journey time | | | | | |
| Waiting on the bus stop | | | | | |
| Punctuality according to time-table | | | | | |
| Regularity | | | | | |
| Frequency | | | | | |
| Reliability of service | | | | | |
| Suitability | | | | | |

TOURISTS' PERCEPTION ON MOBILITY AND THE BUS SERVICE

| **Customer Care** | **Scale** | | | | |
|---|---|---|---|---|---|
| | Least Important 1 | 2 | 3 | 4 | Most Important 5 |
| Overall company commitment | | | | | |
| Bus driver customer service | | | | | |
| Handling customers' concerns & complaints | | | | | |
| Staff knowledge | | | | | |
| Appearance & behaviour | | | | | |
| Communication with customers | | | | | |
| Staff helpfulness | | | | | |

| **Comfort** | **Scale** | | | | |
|---|---|---|---|---|---|
| | Least Important 1 | 2 | 3 | 4 | Most Important 5 |
| Level of crowding on the bus | | | | | |
| Seating & personal space | | | | | |
| Driving speed & manner | | | | | |
| Vehicle cleanliness | | | | | |
| Vehicle condition | | | | | |
| Lighting facilities on the bus | | | | | |
| Lighting facilities on the bus stop | | | | | |
| Temperature conditions on the bus | | | | | |
| Temperature conditions on the bus stop | | | | | |

| **Fare** | **Scale/Rata** | | | | |
|---|---|---|---|---|---|
| | Least Important 1 | 2 | 3 | 4 | Most Important 5 |
| Affordability | | | | | |
| Range of tickets available by time of day | | | | | |
| Range of tickets available weekly/monthly | | | | | |
| Tickets for socially disadvantaged persons | | | | | |

| **Security** | **Scale** | | | | |
|---|---|---|---|---|---|
| | Least Important 1 | 2 | 3 | 4 | Most Important 5 |
| Freedom from crime | | | | | |
| Freedom from accident | | | | | |

| **Impact on the environment** | **Scale** | | | | |
|---|---|---|---|---|---|
| | Least Important 1 | 2 | 3 | 4 | Most Important 5 |
| Noise pollution produced by bus | | | | | |
| Air pollution produced by bus | | | | | |

12. If you were to use the bus and the route would involve more than one bus connection to reach your destination. How many buses would you consider catching?

i. 1 ☐ ii. 2 ☐
iii. 3 ☐ iv. 4 ☐

13. List any comments/suggestions on the bus service in Malta.

_____

_____

Thank you for your time

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

Index:

This questionnaire is part of a Doctoral research project. The research is about public perception on transport and public transport.

It would be greatly appreciated if you could dedicate eight (8) minutes of your time to answer the questionnaire.

The answers will be maintained with the strictest confidence and the questionnaire will be used for research purposes only.

A summary of the results can be sent to you by e-mail, if you would be interested.

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Hawnhekk mill-Universita' ta' Malta. Qed issir ricerka ghal PhD fuq x'tahseb in-nies fuq it-trasport u s-servizz tal-linja.

Dan il-questionnaire jiehu 6 minuti. Jinteressak tirrispondi?

Ir-risposti ser jinzammu ghall-uzu biss ta' din ir-ricerka.

Jekk jinteressak inkunu nistghu nibghatulek ir-rizultati bl-e-mail.

---

Surveyor Name:

Time:

Date:

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

1. Gender: i. Male ☐ ii. Female ☐
1. Sess: i. Ragel ii. Mara

2. Age/ *Eta'* : i. 11-20 ☐ ii. 21-30 ☐
iii. 31-40 ☐ iv. 41-50 ☐
v. 51-60 ☐ vi. 60+ ☐

3. Under which of the following categories would you classify yourself. Please select **one** (**1**) of the following.
3. Taht liema kategorija tikklassifika ruhek? Jekk joghgbok aghzel wahda (**1**) minn dawn.

i. Legislators & senior officials
i. Legislaturi u ufficcjali imlahhqin ☐

ii. Professionals
ii. Professjonisti ☐

iii. Technicians & associate professionals
iii.Teknici u teknikament professjonali ☐

iv. Clerks
iv. Skrivan/a ☐

v. Service workers & shop & market sales workers
v. Haddiem/a li joffru servizz ☐

vi. Craft & related
vi. Haddiem/a fl-artiggjanat ☐

vii. Plant & machine operators & assemblers
vii. Haddiem/a fil-magni fil-qasam industrijali ☐

viii. Elementary occupations
viii. Okkupazzjonijiet elementari ☐

ix. Armed forces
ix.Forzi Armati ☐

x. Skilled agriculture and fishery workers
x. Imharreg/imharrga fl-agrikoltura u/jew is-sajd ☐

xi. Student
xi. Student/a ☐

xii. Housewife
xii. Mara tad-dar ☐

xiii. Retired
xiii. Irtirat/a ☐

xiv. Unemployed
xiv. Qed infittex xoghol ☐

4. To which town/village (e.g. Valletta) do you travel **mostly** e.g. for work/school or shopping (in case of housewives).
4. Lejn liema belt/rahal (ez. Il-Belt) tmur **l-iktar** ez. Ghax-xoghol/l-iskola jew biex taghmel ix-*xiri f'kaz ta' mara* tad-dar).

_____

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

5. What is the most frequent type of transport that you use? Please select **one** (**1**) of the following.
5. Liema hu l-*aktar mezz ta' trasport li tuża'? Jekk joghgbok aghzel* **wiehed** (**1**) biss minn dawn li ser insemmi.

| | | | |
|---|---|---|---|
| i. Car (driver)<br>i. Karozza (sewwieq/a) | ☐ | ii. Car (passenger)<br>ii. Karozza (passiggier/a) | ☐ |
| iii. By bus<br>iii. *B'tal*-linja | ☐ | iv. By coach or minibus<br>iv. Bil-kowc jew minibus | ☐ |
| v. By motorbike<br>v. Bil-mutur | ☐ | vi. On foot (more than 5 minutes)<br>vi. Bil-mixi (ghal iktar minn 5 minuti | ☐ |
| vii. By bicycle<br>vii. Bir-rota | ☐ | viii. By ferry<br>viii. Bil-vapur jew id-dghajsa | ☐ |
| ix. By taxi<br>ix. Bit-taxi | ☐ | x. Other means, please specify<br>x. *B'mezz iehor, jekk joghbok ghid x'inhu* | ☐ |

6. What is your average time taken to reach your destination that you **mostly** travel to e.g. work/school or shopping? Please select **one** (**1**) of the following.
6. Bejn wiehed u iehor kemm iddum biex tasal fil-*lokalita' li ghazilt li tmur* l-aktar (issoltu) ez. Ghax-xoghol/skola jew biex taghmel ix-xiri? Jekk joghgbok aghzel **wahda** (**1**) minn dawn li ser insemmi.

| | | | |
|---|---|---|---|
| i. 0 – 15 minutes | ☐ | ii. 16 – 20 minutes | ☐ |
| iii. 21 – 30 minutes | ☐ | iv. 31 – 60 minutes | ☐ |

7.a. (This question refers to respondents who **DID NOT** choose the option **By Bus** in question 5 above.) Would you consider using the bus for frequent use?
7.a. (Din il-mistoqsija tirreferi biss lil min fil-mistoqsija no. 5 ***m'ghazilx b'tal*-linja**.) *Tikkunsidra tuża' tal*-linja ghall-uzu frekwenti?

i. Yes/Iva ☐ ii. No/Le ☐

7.b. Please state reasons for your answer:
7.b. Jekk joghgbok aghti raguni ghar-risposta tieghek:

_____

## PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE
## *X'TAHSEB IN-*NIES FUQ IL-*MOBBILTA' U S-*SERVIZZ TAL-LINJA

8.a. Please answer the following question **even** if you are not a bus user. Rate the following set of characteristics according to **what you think** about the **CURRENT** (**Arriva**) bus service. Tick (✓) the scale provided in the table below; **5** being the **best** and **1** being the **worst**.

8.a. Din il-mistoqsija tirrifletti ***x'jahseb il-pubbliku*** fuq is-servizz **ezistenti** (***ta' l-*Arriva**) rigward tal-linja. Jekk joghgbok irrispondi din il-mistoqsija **anke** jekk ma tuzax tal-linja. Ser insemmi karatteristici tipici, jekk joghgbok aghti rata bejn **1 (l-aghar)** u **5 (l-ahjar)** fuq kull wahda.

| | *Scale/Rata* | | | | | |
|---|---|---|---|---|---|---|
| | Worst/ *l-aghar* 1 | 2 | 3 | 4 | Best/ *l-ahjar* 5 | Don't know/ *Ma nafx* |
| Accessibility *Kemm issib is-servizz accessibli/ hafif biex tuzah* | | | | | | |
| Information *Informazzjoni* | | | | | | |
| Time *Puntwalita' u dewmien sakemm tasal fid-destinazzjoni tieghek* | | | | | | |
| Customer Care *Ghajnuna generali ghall-konsumatur* | | | | | | |
| Fare *Noll* | | | | | | |
| Comfort *Kumdita' fuq l-istage u fuq tal-linja* | | | | | | |
| Security *Sigurta' fuq l-istage u fuq tal-linja* | | | | | | |
| Impact on the environment *Impatt fuq l-ambjent* | | | | | | |

8.b. Please rate the following statement. The **new** (**Arriva**) **bus service** is better than the **old bus service**.

8.b. Jekk joghgbok aghti rata ghal din is-sentenza. Is-servizz il-***gdid ta' l-*Arriva** huwa ahjar mis-servizz tal-linja l-antik.

| Agree Strongly Naqbel Hafna | Agree Moderately Naqbel Moderatament | Agree Slightly Naqbel Ftit | Disagree Slightly Ma Naqbilx Ftit | Disagree Moderately Ma Naqbilx Moderatament | Disagree Strongly Ma Naqbilx Hafna |
|---|---|---|---|---|---|
| | | | | | |

8.c. Please give reasons for your answer. Jekk joghgbok aghti raguni ghall-ghazla tieghek.

_____

_____

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

8.d. Please rate the following statement. The **new (Arriva) bus service** met my expectations.
8.d. Jekk joghgbok aghti rata ghal din is-sentenza. Is-servizz il-***gdid ta' l*-Arriva** lahaq l-aspettativi tieghi.

| Agree Strongly<br>Naqbel Hafna | Agree Moderately<br>Naqbel Moderatament | Agree Slightly<br>Naqbel Ftit | Disagree Slightly<br>Ma Naqbilx Ftit | Disagree Moderately<br>Ma Naqbilx Moderatament | Disagree Strongly<br>Ma Naqbilx Hafna | I did not have expectations<br>Ma kellix aspettativi |
|---|---|---|---|---|---|---|
| | | | | | | |

8.e. Please give reasons for your answer. Jekk joghgbok aghti raguni ghall-ghazla tieghek.
_____
_____

9. How far would you consider a bus stop to be within a suitable walking distance from your home?
*9. Kemm tahseb li bus stop ghandu jkun 'l boghod f'distanza ragonevoli mid*-dar tieghek sabiex timxi sa dan il-bus stop?

i. 0-5 minutes ☐ ii. 6-10 minutes ☐
iii. 11-15 minutes ☐ iv. 16-20 minutes ☐
v. 21-30 minutes ☐

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

10.a. Out of the following list please choose what you **consider** the **2 important** factors for the **new service** to increase its patronage (**1** being the **most important** and **2** being the **2nd most important**).
10.a. Din il-mistoqsija tirrifletti **kif tahseb** li s-servizz il-**gdid tal-linja** ghandu jzid il-patrunagg. Jekk joghgbok aghzel l- aktar **zewg 2** fatturi li tahseb li huma importanti (**1 l-ahjar** u **2 it-tieni l-ahjar**).

| | |
|---|---|
| Accessibility (Easy to use)<br>*Kemm issib is-servizz accessibli/ hafif biex tuzah* | |
| Information (Any type of information for the user)<br>*Informazzjoni* | |
| Time (Punctuality and trip length)<br>*Puntwalita' u dewmien sakemm tasal fid-destinazzjooni tieghek* | |
| Customer Care<br>*Servizz ghall-konsumatur* | |
| Fare<br>*Noll* | |
| Comfort<br>*Kumdita' fuq l-istage u fuq tal-linja* | |
| Security<br>*Sigurta' fuq l-istage u fuq tal-linja* | |
| Impact on the environment (Caused by the service)<br>*Impatt fuq l-ambjent* | |

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

10.b. From the 2 selected factors please rank the following criteria for the **new (Arriva) service** to increase its patronage. Tick (✓) the scale provided in the table below; **5** being the **most important** and **1** being the **least important**.

10.b. Miz-**zewg 2** karatteristici li ghazilt, jekk joghgbok aghti rata ghall-kriterji li tahseb li ghandhom jigu **kkunsidrati biex izidu l-patrunagg**. Aghti **5 ghall-iktar importanti** u **1 ghall-inqas importanti**.

| **Accessibility** *Accessibilita'* | **Scale/Rata** | | | | |
|---|---|---|---|---|---|
| | Least Important L-Inqas Importanti 1 | 2 | 3 | 4 | Most Important L-Iktar Importanti 5 |
| To reach bus stop (infrastructure) Biex tilhaq il-bus stop (infrastruttura) | | | | | |
| Ease of access on the bus Fuq tal-linja | | | | | |
| Entering/exiting the bus *Biex titla' u tinzel tal*-linja | | | | | |
| Ease of obtaining ticket Heffa biex tixtri n-noll | | | | | |
| Ease of obtaining the most suitable ticket Heffa biex taghzel liem hu l-ahjar noll ghalik | | | | | |
| Network Coverage Jekk ir-rotot ikoprux areas li jaqduk | | | | | |

| **Information** Informazzjoni | **Scale/Rata** | | | | |
|---|---|---|---|---|---|
| | Least Important L-Inqas Importanti 1 | 2 | 3 | 4 | Most Important L-Iktar Importanti 5 |
| Accuracy Precizjoni | | | | | |
| On Stops Fuq il-bus stops | | | | | |
| On Bus Fuq tal-linja | | | | | |
| Updates & Announcements Aggornamenti u avvizi | | | | | |

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

| **Time**<br>**Hin** | **Scale/Rata**<br>Least Important<br>L-Inqas Importanti<br>1 | 2 | 3 | 4 | Most Important<br>L-Iktar Importanti<br>5 |
|---|---|---|---|---|---|
| Journey time<br>Kemm idum il-vjagg | | | | | |
| Waiting on the bus stop<br>Tistenna fuq il-bus stop | | | | | |
| Punctuality according to time-table<br>*Puntwalita' skond it*-time table | | | | | |
| Regularity<br>*Regolarita'* | | | | | |
| Frequency<br>Frekwenza | | | | | |
| Reliability of Service<br>Kemm hu affidabbli s-servizz | | | | | |
| Suitability<br>Kemm hu addattat skond il-hin tieghek | | | | | |

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

| **Customer Care**<br>**Servizz ghall-konsumatur** | **Scale/Rata** | | | | |
|---|---|---|---|---|---|
| | Least Important<br>L-Inqas Importanti<br>1 | 2 | 3 | 4 | Most Important<br>L-Iktar Importanti<br>5 |
| Overall company commitment<br>Impenn mill-kumpanija | | | | | |
| Bus driver customer service<br>Servizz ghall-konsumatur min naha tad-driver tal-linja | | | | | |
| Handling customers' concerns & complaints<br>Kif jigu mharsa t-thassib u l-ilmenti tal-konsumaturi | | | | | |
| Staff knowledge<br>Kemm il-haddiema jkunu jafu informazzjoni dwar is-servizz | | | | | |
| Appearance & behaviour<br>Apparenza u mgieba | | | | | |
| Communication with customers<br>Komunikazzjoni mal-konsumatur | | | | | |
| Staff helpfulness<br>Ghajnuna mill-haddiema | | | | | |

| **Fare**<br>**Noll** | **Scale/Rata** | | | | |
|---|---|---|---|---|---|
| | Least Important<br>L-inqas importanti<br>1 | 2 | 3 | 4 | Most Important<br>L-iktar importanti<br>5 |
| Affordability<br>Jekk ikunx irhis jew gholi | | | | | |
| Range of tickets available by time of day<br>*Ghazla ta' prezzijiet differenti ghal* matul il-jum | | | | | |
| Range of tickets available weekly/monthly<br>*Ghazla ta' prezzijiet differenti ghal* perijodi twal bhal gimgha/xahar | | | | | |
| Tickets for socially disadvantaged persons<br>Prezzijiet differenti ghal nies *svantaggjati e.g. anzjani/dizabbilta'* | | | | | |

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

| **Comfort** *Kumdita'* | **Scale/Rata** | | | | |
|---|---|---|---|---|---|
| | Least Important L-Inqas Importanti 1 | 2 | 3 | 4 | Most Important L-Iktar Importanti 5 |
| Level of crowding on the bus *Ammont ta' iffullar fuq tal*-linja | | | | | |
| Seating & personal space Il-post fejn tpoggi u l-ispazju personali | | | | | |
| Driving speed & manner Is-sewqan tax-xufier u l-mod kif isuq | | | | | |
| Vehicle cleanliness Indafa tal-vettura | | | | | |
| Vehicle condition Kundizzjoni tal-vettura | | | | | |
| Lighting facilities on the bus *Facilitajiet ta' dawl fuq il*-vettura | | | | | |
| Lighting facilities on the bus stop *Facilitajiet ta' dawl fuq l*-istage | | | | | |
| Temperature conditions on the bus Temperatura fuq il-vettura | | | | | |
| Temperature conditions on the bus stop Temperatura fuq l-istage | | | | | |

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

| **Security** *Sigurta'* | **Scale/Rata** | | | | |
|---|---|---|---|---|---|
| | Least Important L-Inqas Importanti 1 | 2 | 3 | 4 | Most Important L-Iktar Importanti 5 |
| Freedom from crime Helsien minn kriminalita | | | | | |
| Freedom from accident Helsien minn incidenti | | | | | |

| **Impact on the environment Impatt fuq l-ambjent** | **Scale/Rata** | | | | |
|---|---|---|---|---|---|
| | Least Important L-Inqas Importanti 1 | 2 | 3 | 4 | Most Important L-Iktar Importanti 5 |
| Noise pollution produced by bus Tniggiz minn storbju maghmul minn tal-linja | | | | | |
| Air pollution produced by bus Tniggiz fl-arja maghmul minn tal-linja | | | | | |

11.a. (To be answered by non-bus users) If you were to use the bus and the route would involve more than one bus connection to reach your destination. How many buses would you consider catching?
11.a. (Din il-mistoqsija ghandha tigi mwiegba minn min ma juzax is-servizz tal-linja) Li *kieku kellek tuza' tal*-linja u r-rotta tkun tinvolvi iktar minn tal-linja wahda biex tasal fejn tixtieq. Kemm-il tal-linja tikkunsidra tirkeb?

i. 1 ☐ ii. 2 ☐
iii. 3 ☐ iv. 4 ☐

11.b. (To be answered by bus users) How many buses do you catch to reach the destination that you **mostly travel** to e.g. work/school or shopping?
11.b. (Din il-*mistoqsija ghandha tigi mwiegba minn min juza' is*-servizz tal-linja)Kemm-il tal-linja tirkeb biex tasal fil-lokalita' *li ghazilt li tmur* l-aktar (issoltu) ez. Ghax-xoghol/skola jew biex taghmel ix-xiri?

i. 1 ☐ ii. 2 ☐
iii. 3 ☐ iv. 4 ☐

**PUBLIC PERCEPTION ON MOBILITY AND THE BUS SERVICE**
***X'TAHSEB IN*-NIES FUQ IL-*MOBBILTA' U S*-SERVIZZ TAL-LINJA**

12. List any comments/suggestions that you would like to add on the bus service in Malta.
12. Ghandek xi kummenti/suggerimenti li tixtieq taghmel fuq is-servizz tal-*linja f'Malta?*

_____

_____

_____

Thank you for your time/Grazzi tal-hin tieghek

TOURISTS' PERCEPTION ON MOBILITY AND THE BUS SERVICE

Index:

This questionnaire is part of a Doctoral research project. The research is about public perception on transport and public transport.

It would be greatly appreciated if you could dedicate eight (8) minutes of your time to answer the questionnaire.

The answers will be maintained with the strictest confidence and the questionnaire will be used for research purposes only.

A summary of the results can be sent to you by e-mail, if you would be interested.

---

Surveyor name:

Time:

Date:

TOURISTS' PERCEPTION ON MOBILITY AND THE BUS SERVICE

1. Gender: i. Male ☐ ii. Female ☐

2. Age:

i. 11-20 ☐ ii. 21-30 ☐

iii. 31-40 ☐ iv. 41-50 ☐

v. 51-60 ☐ vi. 60+ ☐

3.a. Reason for visiting Malta:

i. Holiday ☐ ii. Business ☐

iii. Education ☐ iv. Other, please specify ☐ _____

3.b. Is this your first time in Malta? Yes ☐ No ☐

4. Length of stay:

i. 1-3 nights ☐ ii. 4-7 nights ☐

iii. 8-14 nights ☐ iv. 15-21 nights ☐

v. 21+ nights ☐ vi. Other, please specify ☐ _____

5.a. Type of accomodation:

i. Guesthouse ☐ ii. Host family ☐

iii. Self-catered apartment ☐ iv. 1-star hotel ☐

v. 2-start hotel ☐ vi. 3-star hotel ☐

vii. 4-star hotel ☐ viii. 5-star hotel ☐

ix. Other, please specify ☐ _____

5.b. In which town/village were you staying? (e.g. St. Julian's) _____

6.a. What mode of transport did you **generally** use while in Malta? Select all that apply (✓).

i. Private coaches ☐ ii. Cycling ☐

iii. Walking ☐ iv. Buses ☐

v. Hired car ☐ vi. Hired motorcycle ☐

vii. Taxis ☐ viii. All of the above ☐

ix. Cycling, walking and buses ☐ x. Other, please specify ☐ _____

6.b. Which mode was mostly used? Please name **one** only _____.

7. How many buses do you consider catching for one trip?

i. 1 ☐ ii. 2 ☐

iii. 3 ☐ iv. 4 ☐

8. What was the general average time taken to travel to your destination?

i. 0 – 15 minutes ☐ ii. 16 – 20 minutes ☐

iii. 21 – 30 minutes ☐ iv. 31 – 60 minutes ☐

9.a. Please rate the following set of characterstics according to the **NEW (Arriva)** bus service. Tick (✓) the scale provided in the table below; **5** being the **best** and **1** being the **worst**.

| | *Scale* | | | | | |
|---|---|---|---|---|---|---|
| | Worst 1 | 2 | 3 | 4 | Best 5 | Don't know |
| Accessibility (Easy to use) | | | | | | |
| Information (Any type of information for the user) | | | | | | |
| Time (Punctuality and trip length) | | | | | | |
| Customer Care | | | | | | |
| Fare | | | | | | |
| Comfort | | | | | | |
| Security | | | | | | |
| Impact on the environment (caused by the service) | | | | | | |

9.b. Please answer this question only if you have been in Malta before the 3rd July, 2011. Kindly rate the following statement. The **new (Arriva) bus service** is better than the **old bus service**.

| Agree Strongly | Agree Moderately | Agree Slightly | Disagree Slightly | Disagree Moderately | Disagree Strongly |
|---|---|---|---|---|---|
| | | | | | |

9.c. Please give reasons for your answer.

_____

_____

9.d. Please rate the following statement. The **new (Arriva) bus service met my expectations.**

| Agree Strongly | Agree Moderately | Agree Slightly | Disagree Slightly | Disagree Moderately | Disagree Strongly | I did not have expectations |
|---|---|---|---|---|---|---|
| | | | | | | |

9.e. Please give reasons for your answer.

_____

_____

10. a. Would you consider using the bus if you visit Malta again?

i. Yes ☐ ii. No ☐

10. b. Please state reasons for your answer:

_____

_____

11. How far would you consider a bus stop to be within a suitable walking distance from your accomodation?

i. 0-5 minutes ☐ ii. 6-10 minutes ☐

iii. 11-15 minutes ☐ iv. 16-20 minutes ☐

v. 21-30 minutes ☐

12.a. Out of the following list please choose what you **consider** the **2 important** factors for an **increase in patronage** on the **new bus service** (**1** being the **most important** and **2** being the **2nd most important**).

| Accessibility | Information | Time | Customer Care | Fare | Comfort | Security | Impact on the environment |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

12.b. From the 2 selected factors please rank the following criteria for an **increase in patronage** on the **new bus service**. Tick (✓) the scale provided in the table below; **5** being the **most important** and **1** being the **least important**.

| **Accessibility** | **Scale** | | | | |
|---|---|---|---|---|---|
| | Least Important 1 | 2 | 3 | 4 | Most Important 5 |
| To reach bus stop | | | | | |
| Ease of access on the bus | | | | | |
| Entering/exiting the bus | | | | | |
| Ease of obtaining ticket | | | | | |
| Ease of obtaining the most suitable ticket | | | | | |
| Network Coverage | | | | | |

TOURISTS' PERCEPTION ON MOBILITY AND THE BUS SERVICE

| **Information** | **Scale** | | | | |
|---|---|---|---|---|---|
| | Least Important 1 | 2 | 3 | 4 | Most Important 5 |
| Accuracy | | | | | |
| On Stops | | | | | |
| On Bus | | | | | |
| Updates & Announcements | | | | | |

| **Customer Care** | *Scale* | | | | |
|---|---|---|---|---|---|
| | Least Important 1 | 2 | 3 | 4 | Most Important 5 |
| Overall company commitment | | | | | |
| Bus driver customer service | | | | | |
| Handling customers' concerns & complaints | | | | | |
| Staff knowledge | | | | | |
| Appearance & behaviour | | | | | |
| Communication with customers | | | | | |
| Staff helpfulness | | | | | |

| **Time** | **Scale** | | | | |
|---|---|---|---|---|---|
| | Least Important 1 | 2 | 3 | 4 | Most Important 5 |
| Journey time | | | | | |
| Waiting on the bus stop | | | | | |
| Punctuality according to time-table | | | | | |
| Regularity | | | | | |
| Frequency | | | | | |
| Reliability of service | | | | | |
| Suitability | | | | | |

| **Fare** | **Scale/Rata** | | | | |
|---|---|---|---|---|---|
| | Least Important 1 | 2 | 3 | 4 | Most Important 5 |
| Affordability | | | | | |
| Range of tickets available by time of day | | | | | |
| Range of tickets available weekly/monthly | | | | | |
| Tickets for socially disadvantaged persons | | | | | |

| Comfort | Scale | | | | |
|---|---|---|---|---|---|
| | Least Important 1 | 2 | 3 | 4 | Most Important 5 |
| Level of crowding on the bus | | | | | |
| Seating & personal space | | | | | |
| Driving speed & manner | | | | | |
| Vehicle cleanliness | | | | | |
| Vehicle condition | | | | | |
| Lighting facilities on the bus | | | | | |
| Lighting facilities on the bus stop | | | | | |
| Temperature conditions on the bus | | | | | |
| Temperature conditions on the bus stop | | | | | |

| **Security** | **Scale** | | | | |
|---|---|---|---|---|---|
| | Least Important 1 | 2 | 3 | 4 | Most Important 5 |
| Freedom from crime | | | | | |
| Freedom from accident | | | | | |

| **Impact on the environment** | **Scale** | | | | |
|---|---|---|---|---|---|
| | Least Important 1 | 2 | 3 | 4 | Most Important 5 |
| Noise pollution produced by bus | | | | | |
| Air pollution produced by bus | | | | | |

13. List any comments/suggestions on the bus service in Malta.

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Thank you for your time

Appendix B Information about interviews and Consent Form

**Help me understand public transport in Malta!**

Dear Interviewee,

My name is Thérèse Bajada and I would like to invite you to participate in my research study, entitled: The impact of bus reform on attitudes and bus use: The case of Malta. Before you decide whether you would like to take part, it is important for you to know what the research is about and what it will involve. Please read this information sheet carefully and ask me questions if you wish. I will be more than happy to answer you.

**What is the study about?**

I would like to understand your opinion about the bus service in Malta. For example what do you think about the bus service in Malta. Different people have different opinions and I am interested in what these opinions are, and how these can help to improve the bus service. I am studying local participants and tourists of different age groups who are over 18 years of age and who are bus users and/or car users.

**Why is the study being done?**

This study is part of my doctoral degree. The goal of this study is to understand the different opinions of people regarding the bus service in Malta. The study may help to improve the bus service in Malta and abroad.

**What will happen during the interview?**

The interview will take a maximum of 30 minutes. We will spend some time talking about the bus service in Malta. I will be recording our discussion because this will help me analyse the information. If at some point you feel that I should stop recording the discussion you are free to do so and let me know.

**What are the potential benefits?**

I hope that with your help and other interviewers I will be able to identify factors that are important for bus service quality and propose aspects that in the future may provide a more attractive bus service.

**Do I have to take part in this study?**

It is up to you whether or not to take part in this study. If you decide to take part, you will be asked to sign a consent form. If you decide that you do not wish to participate in this research you are free to stop at any time, without giving a reason. I want to make sure that everyone is happy when taking part in my study. If you are interested, I can inform you if I publish results from this study.

**Will information about me be available to anyone?**

All information collected during the interview will be kept strictly confidential. It is important for you to know that I am interested in the average opinion about the bus service in Malta, and not in any particular individual opinion. All the research that will be reported will contain information about the average opinion of all the interviewees and no individual person will be named or singled out.

**Who will have access to the research records?**

Only I will be able to look at the information that I will collect. The study complies with the Data Protection Act of 1998 (DPA). The DPA makes sure the information that I collect and keep is well protected. At the end of the study the recordings will be deleted.

**How to contact me**

If you wish to have further information you can e-mail me on _____or contact me on my mobile _____.

***Thank you for taking the time to read this information sheet.***

***Your help makes my research possible!***

LONDON'S GLOBAL UNIVERSITY

UCL

**Interview**
**This form must be completed before the session begins**
**All information is confidential**
**CONSENT FORM**

**Title of Project:** The impact of bus reform on attitudes and bus use: The case of Malta.

**Name of Researcher:** Thérèse Bajada

1. I confirm that I have understood the information provided by Thérèse Bajada for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason.

3. I agree to take part in the above study.

| | | |
|---|---|---|
| Thérèse Bajada<br>Name of Interviewer | _____<br>Date | _____<br>Signature |
| _____<br>Name of Interviewee | _____<br>Date | _____<br>Signature |

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email@ucl.ac.uk
www.ucl.ac.uk

## Appendix C Permission from MIA

----- Original Message -----

From: THERESE BAJADA [mailto:_____]

Sent: Thursday, April 14, 2011 02:28 PM

To: Maria Daniela Formosa; Daniela Mallia

Subject: Request

Dear Ms Formosa and Ms Mallia,

I am a PhD research student. For the purpose of my research I need to carry out questionnaires to tourists in the departures section at the MIA.

The questionnaires will be on public perception on the public transport service and 4 surveyors would be carrying out the questionnaires.

I am therefore, seeking permission from your end to carry out the questionnaires.

Thanking you in advance for your cooperation.

Kind regards,

Therese Bajada

**Subject:** RE: Request

**From:** Daniela Mallia <_____>

**Date:** 18/04/2011 15:18

**To:** Therese Bajada <_____>

**CC:** Maria Daniela Formosa <_____>

Dear Ms Bajada

We will need the days and times you plan to conduct the research in check-in-hall and/departures.

During data collection you will need to respect both the exigencies of our customers and local data protection rules. Before we give you our go-ahead please provide us with a letter of good intent by your Mentor/Tutor we normally receive an official letter from the University.

With kind regards

Daniela Mallia

Executive

PR & Corporate Communications

Direct: _____

Tel: _____

Fax: _____

*****

UNIVERSITY OF MALTA

INSTITUTE FOR SUSTAINABLE DEVELOPMENT

18th April 2011

Ms Daniela Mallia

- Blanked out -

Dear Ms Mallia,

**Re: Ms Therese Bajada – Request to conduct questionnaires at MIA**

Reference is made to the above request by Ms Bajada to conduct questionnaires to tourists at the Malta International Airport in conjunction with her Ph.D. studies at University College London (UCL).

I can confirm that Ms Bajada is an Assistant Lecturer at the Institute for Sustainable Development at the University of Malta and has since September 2010 been a registered Ph.D. student at UCL. These studies are part of her contractual obligations with the Institute and the University and she is seeking to complete her studies over the coming four years.

In her research she is investigating the perception of locals and tourists with regard to the current public transport in Malta and compare it with the new proposed reform, as published by Government over the past months. In order to obtain information from tourists about their experience and perception of using public transport she needs to capture tourists on their way out of the island, and therefore the ideal location being the MIA lounge.

I would therefore like to support her request and confirm that the use of the information collected by Ms Bajada is for research purposes only.

Yours sincerely,

- Blanked out -

Dr Maria Attard

- Blanked out -

**Subject:** RE: Request

**From:** Daniela Mallia <_____ >

**Date:** 19/04/2011 14:43

**To:** Therese Bajada <_____>

**CC:** Maria Daniela Formosa <_____ >

Dear Ms.Bajada,

Good afternoon,

We thank you for forwarding the letter of intent together with your confirmation to adhere to our operational exigencies . We have advised our collegues at the Security Office that you have permission to conduct surveys on the days and times indicated in your e -mail below.

Please ask your surveyors to keep a copy of the e-mail as evidence of the permit obtained.

We thank you and wish you the very best in your studies.

With kind regards

Daniela Mallia

**Subject:** Request for permission

**From:** Therese Bajada <_____ >

**Date:** 26/07/2012 14:01

**To:** Daniela Mallia <_____ >, Maria Daniela Formosa

<_____ >

Dear Ms Mallia and Ms Formosa,

Last year in May 2011 I obtained permission from your end in order to carry out questionnaires at the check-in hall in the departures area.

May I kindly ask for permission to collect the 2nd dataset for my PhD. My research is about the tourists' perception on modal choice (questionnaire

attached). I am also attaching the letter of good intent by my mentor at the University of Malta.

The questionnaires if possible would take place during the month of August during weekdays from 9am to 1pm and from 2pm to 5pm.

Should you need any additional information kindly let me know. Whilst hoping for a positive reply I thank you in advance for your cooperation.

Thanks and kind regards,

Therese Bajada.

**Subject:** RE: Request for permission

**From:** Maria Daniela Formosa <_____ >

**Date:** 31/07/2012 11:55

**To:** Therese Bajada <_____ >

**CC:** Daniela Mallia <_____ >

Dear Ms Bajada,

This is to inform you that MIA finds no objection and would like to grant permission to conduct the survey. This permit is being granted on condition that the results/ findings are shared with MIA, at least in summary and that a copy of the survey is forwarded to Malta International Airport prior to conducting the survey.

Kindly forward dates of survey.

Regards,

*Maria Daniela Formosa*

Appendix D Semi-Structured Interviews

Semi-structured interview questions – Maltese residents Car users

**Locals - Car Users**

1. What is your opinion about the bus service in Malta?
2. Have you ever used the bus? What was your experience?
3. What is your opinion about using the bus?
4. Are you aware of the changes regarding the bus service?
5. (a) What do you think about
   - Congestion, Impact on the environment through transport, Anger related to traffic

   (b) Do you think that as an individual you need to do something to solve these issues? What about the role of the rest of society?

   (c) Do you think that the bus is a way forward to improve these issues?
6. What would your family and friends think about **you** using the bus?
7. What do you think about the future of the bus service in Malta?
8. Would you like to add anything else?

Semi-structured interview questions – Maltese residents Bus users

**Locals - Bus Users**

1. What is your opinion about the bus service in Malta?
2. How would you describe the bus service quality? Can you recall some experiences?
3. Are you aware of the changes regarding the bus service?
4. What is your opinion about using the bus?
5. (a) What do you think about
   - Congestion, Impact on the environment through transport, Anger related to traffic

   (b) Do you think that using the bus is a way forward to improve these issues?

   (c) Do you think that as an individual you need to do something to solve these issues? And what about the role of the rest of society?
6. What would your family and friends think about **you** using the bus?
7. What do you think about the future of the bus service in Malta?
8. Would you like to add anything else?

Questions done after the interviews to Maltese residents

**Demographics**

1. Gender: i. Male ☐ ii. Female ☐

2. Age:
   - i. 11-20 ☐
   - ii. 21-30 ☐
   - iii. 31-40 ☐
   - iv. 41-50 ☐
   - v. 51-60 ☐
   - vi. 60+ ☐

3. Occupation _____

4. Household type _____ (e.g. maisonette)

5. Where do you live? _____ (e.g. Attard)

6. What is the destination that you visit most? _____(e.g. work + locality)

7. What is the type of transport that you use most? _____ (e.g. car passenger)

8. Do you own a car? _____

9. Are you generally a driver or a passenger? _____

10. Do you have a driving license? _____

11. What is the average time taken to reach your destination? Has this changed in the past two years? _____ (in minutes)

12. Is there the availability of a car in your household? _____

-------Thank you for your time-------

Semi-structured interview questions – Tourists

**Tourists**

1. Have you visited Malta before? If yes, when?
2. What types of transport do you use? If bus is included, how frequent do you use it?
3. How did you hear about the bus service in Malta? What is your opinion about it?
4. (a) What do you think about
   - Congestion, Impact on the environment through transport, Anger related to traffic (at home and in Malta)

   (b) Do you think that, as an individual, using the bus at home would improve these issues? And as a tourist do you think that you would improve the above mentioned issues by using the bus?

   (c) Do you think that society needs to do changes to solve these issues (at home and in Malta)? And as an individual?
5. What is your opinion about using the bus? (at home and in Malta)
6. What do you think your family and friends think about **you** using the bus at home and as a tourist?
7. What do you think about the future of the bus service in Malta?
8. Would you like to add anything else?

Questions done after the interviews to Tourists

**Demographics**

1. Gender: i. Male ☐ ii. Female ☐

2. Age: i. 11-20 ☐ iv. 41-50 ☐
ii. 21-30 ☐ v. 51-60 ☐
iii. 31-40 ☐ vi. 60+ ☐

3. Reason for visiting Malta _____

4. Length of stay in Malta _____

5. Type of accommodation _____

6. In which town/village are yōu staying (e.g. St Julian's) _____

7.a. Have you been using other means of transport while in Malta? (e.g. bicycle) _____

7.b. Do you have a driving licence? _____

7.c. Are you making use of a private car (owned or rented) in Malta? _____

8.a. Which areas did you visit? _____

8.b. What is the average time taken to reach your destinations? _____

8.c.i. (If was in Malta before) Has the time taken to reach destinations changed since your last visit? _____

8.c.ii. Do you think that it takes too long? Why? _____

8.d. (If first time in Malta) Did this time meet your expectations? _____

9.a. Do you own a car at home? _____

9.b. Is there the availability of a car in your household? _____

-----Thank you for your time-----

Semi-structured interview questions – Transport Professionals

**Questions:**

1. How would you describe the situation of the bus service?
2. What were the main aspects that led to this situation?
3. If the issues in 1&2 weren't there, what would the plans be/ and your plans be?
4. What were your hopes for the reform?
5. Would you make any changes in the current bus service?
6. Are you aware of any plans for the future?
7. What do you think the (realistic view) of the bus service will be in the next five years?
8. Would you like to add something else, which I may not have addressed?

Appendix E Sample Size

Working out the sample size for Maltese residents and tourists

Margin of Error (Level of Precision) $= z\sigma_{\bar{p}} = 5\% = 0.05$

For a 95% degree of confidence, $z = 1.96$

$\sigma_p$ is the standard error (Standard deviation of the sampling distribution of proportion), which is given by:

$$\sigma_p = \sqrt{\frac{p(1-p)}{n}\left(\frac{N-n}{N-1}\right)}$$

$\sigma_p$ is maximized when $p = 0.5$. When the population size is $N = 345338$ the maximum value of the standard error $\sigma_p$ is:

$$\sigma_p = \sqrt{\frac{p(1-p)}{n}\left(\frac{N-n}{N-1}\right)} = \sqrt{\frac{(0.5)(0.5)}{n}\left(\frac{345338-n}{345338-1}\right)} = 0.000851\sqrt{\frac{345338-n}{n}}$$

$$\text{Maximum margin of error} = z\sigma_{\bar{p}} = (1.96)(0.000851)\sqrt{\frac{345338-n}{n}} = 0.05$$

$$\sqrt{\frac{345338-n}{n}} = 29.97674$$

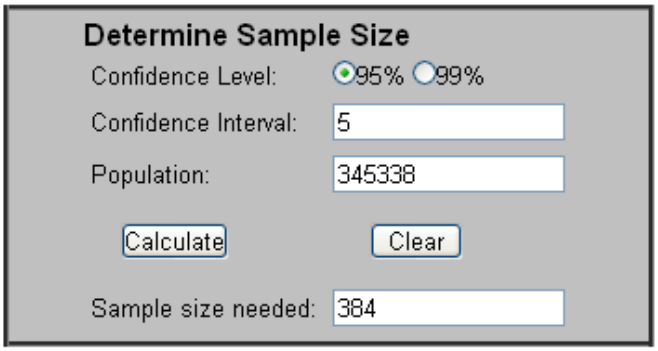
$$\frac{345338-n}{n} = 898.605$$

$$345338 = 899.605n$$

$$n = 384$$

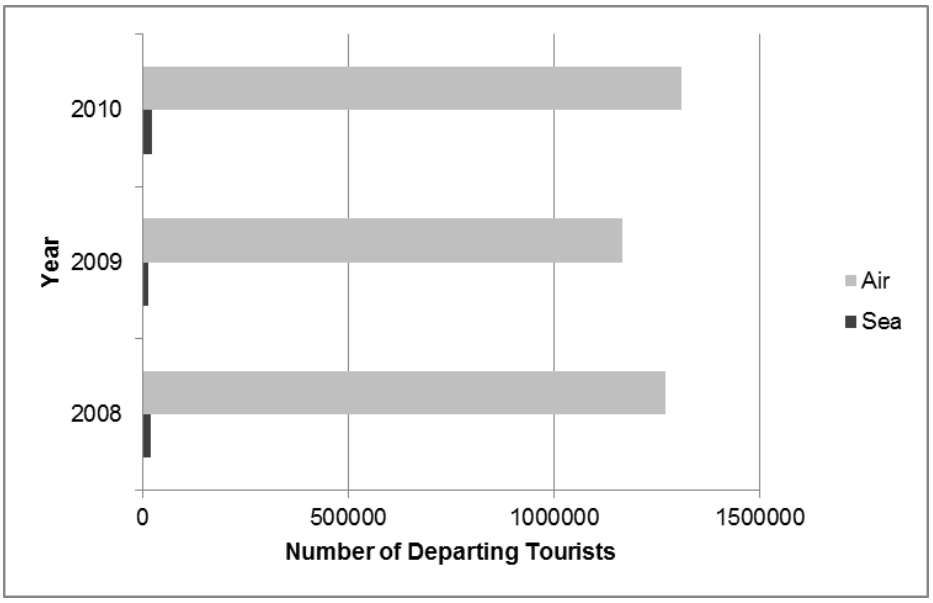
This was confirmed using the online calculator that calculates the required sample size provided the degree of confidence (which is normally taken as 95%), the maximum margin of error (Level of Precision) and the population size.

http://www.surveysystem.com/sscalc.htm



Appendix F Tourist Data

Departing Tourists by mode 2008-2010 (National Statistics Office 2011)



Appendix G COREQ Checklist (Tong et al. 2007)

| **Topic** | **Item No.** | **Guide Questions/Description** | **Details** |
|---|---|---|---|
| *Domain 1: Research team and reflexivity* | | | |
| *Personal characteristics* | | | |
| Interviewer | 1 | Which author conducted the interview? | The researcher |
| Credentials | 2 | What were the researcher's credentials? | B.A. (Hons), M.A., PhD Candidate |
| Occupation | 3 | What was their occupation at the time of the study? | Assistant Lecturer (full-time) and PhD student (part-time) |
| Gender | 4 | Was the researcher male or female? | Female |
| Experience and training | 5 | What experience or training did the researcher have? | The researcher worked for six years with Transport Malta (the regulator) and was in charge of research and surveys for the Transport Strategy Directorate |
| *Relationship with participants* | | | |
| Relationship established | 6 | Was a relationship established prior to study commencement? | At times yes, others instance no – the participants, especially Maltese residents and tourists were met for the first time when the interview was conducted. Most of the transport professionals were acquaintances from previous work experiences |
| Participant knowledge of the interviewer | 7 | What did the participants know about the researcher? E.g., personal goals, reasons | The participants were informed before-hand through contacts, and they were asked to read a the consent form which provided |

| | | | |
|---|---|---|---|
| | | for doing the research | them with information about the research |
| Interviewer characteristics | 8 | What characteristics were reported about the interviewer? | Interests in the research topic |
| *Domain 2: Study design* | | | |
| *Theoretical framework* | | | |
| Methodological orientation and Theory | 9 | What methodological orientation was stated to underpin the study? | Epistemology for interviews based on grounded theory, the analysis is based on the Foucauldian philosophical approach, using Discourse analysis. The selected method of the Discourse analysis includes a combination of Laclau and Mouffe's Discourse Theory and Fairclough's Critical Discourse Analysis |
| *Participant selection* | | | |
| Sampling | 10 | How were participants selected? | Maltese residents were selected through initial contacts<br><br>Tourists were intercepted in touristic areas in Malta<br><br>Transport professionals were contacted directly through e-mail or social media e.g., Linkedin |
| Method of approach | 11 | How were participants approached? | Maltese residents through initial contacts<br><br>Tourists – face-to-face<br><br>Transport professionals through e-mail or social media |
| Sample size | 12 | How many participants | Maltese residents – 17 |

| | | | |
|---|---|---|---|
| | | were in the study? | Tourists – 17<br><br>Transport professionals -11 |
| Non-participation | 13 | How many people refused to participate or dropped out? Reasons? | Maltese residents – no drop-outs<br><br>Tourists – since this involved face-to-face contact, this involved tourists whether they would be interested in participating, there were several who refused<br><br>Transport professionals – 3, 2 did not reply, 1 was only available upon retiring, a long time after the time-frame for data collection |
| *Setting* | | | |
| Setting of data collection | 14 | Where was the data collected? | Data was collected where the interviewees felt comfortable, in some instances this was at their home, in others in a cafeteria, or on benches on promenades. Regarding transport professionals the interviews were mostly held in their offices, and in one case at their residence. |
| Presence of non-participants | 15 | Was anyone else present besides the participants and researchers? | In case of Maltese residents who were elderly, family members were present to help them out. |
| Description of sample | 16 | What are the important characteristics of the sample? | The samples for Maltese residents and tourists included different age groups and gender. Tourists had to be bus users, and transport professionals had to be either involved in the bus reform, or were involved in |

| | | | |
|---|---|---|---|
| | | | policy-making before or after the reform. |
| *Data collection* | | | |
| Interview guide | 17 | Were questions, prompts, guides provided by the authors? Was it pilot tested? | The interviews were semi-structured, so there were questions and prompts. The questions for Maltese residents and tourists were pilot tested. Those for transport professionals were tested on people who were not professionals to see that the questions make sense. |
| Repeat interviews | 18 | Were repeat interviews carried out? | No |
| Audio/visual recording | 19 | Did the research use audio or visual recording to collect the data? | Yes, audio |
| Field notes | 20 | Were field notes made during and/or after the interview? | Yes, when necessary, during the interview |
| Duration | 21 | What was the duration of the interviews? | The interviews lasted 30 minutes on average |
| Data saturation* | 22 | Was data saturation discussed? | Yes, regarding the questions this has been done through the pilot study. When coding this has been done through the different number of times that coding was performed for content analysist, thematic analysis and discourse analysis |
| Transcripts returned | 23 | Were transcripts returned to participants for comment and/or correction? | No, this was not necessary. Participants signed a consent form and were free to stop from continuing the interview whenever they wished. They |

| | | | |
|---|---|---|---|
| | | | were also free to ask or confirm any issues with the researcher whenever they wished |
| *Domain 3: analysis and findings* | | | |
| *Data analysis* | | | |
| Number of data coders | 24 | How many data coders coded the data? | One, this research is part of a PhD degree. It was not possible to find people who would volunteer to code. The results were however, presented in conferences (WCTR SIG 3 2015, Thredbo 14 and WCTR 2016). Feedback was positive. |
| Description of the coding tree | 25 | Did authors provide a description of the coding tree? | Yes, Chapter 5, Figure 5.10 |
| Derivation of themes | 26 | Were themes identified in advance or derived from data? | Eight themes were identified in advance, following parts of the bus service quality criteria. Other themes were derived from data |
| Software | 27 | What software, if applicable, was used to manage the data | Atlas.ti version 6.2 (Atlast.ti 2013) |
| Participant checking | 28 | Did participants provide feedback on the findings? | This procedure was not possible because the information is still being used for the dissertation. In cases where the information was published, no additional feedback was submitted |
| *Reporting* | | | |
| Quotations presented | 29 | Were participant quotations presented to illustrate the themes/findings? Was | Yes, where necessary in tables or in quotations in text. When this was done the quotations were numbered and referred |

| | | | |
|---|---|---|---|
| | | each quotation identified? | with reference numbers for Maltese residents (L#), Tourists (T#), and Transport professionals (E#) |
| Data and findings consistent | 30 | Was there consistency between the data presented and findings? | Yes, even between the different samples, and with the quantitative data |
| Clarity of major themes | 31 | Were major themes clearly presented in the findings? | Yes, refer to Chapter 9 for Maltese residents and Tourists and Chapter 10 for Transport professionals |
| Clarity of minor themes | 32 | Is there a description of diverse cases or discussion of minor themes? | Yes, these were presented in Chapters 9 and 10 |

*Data saturation is reached when there is enough information to replicate the study when the ability to obtain additional new information to replicate the study when the ability to obtain additional new information has been attained, and when further coding is no longer feasible (Fusch & Ness 2015).

## Appendix H Guidelines for interpreting Factor Analysis

Table H.1 Guidelines to interpret the KMO measure. Adapted from (Hair et al. 2014)

| **Index** | **Interpretation** |
|---|---|
| .80 or above | meritorious |
| .70 or above | middling |
| .60 or above | mediocre |
| .50 or above | miserable |
| .50 or below | unacceptable |

Table H.2 Guidelines to interpret factor loadings in the pattern matrix of a factor analysis. Adapted from (Tabachnick & Fidell 2007)

| **Factor loading** | **Interpretation** |
|---|---|
| .71 and above | Excellent |
| .63 and above | Very good |
| .55 and above | Good |
| .45 and above | Fair |
| .32 and above | Poor |

# Appendix I Additional Analysis for Chapter 7

## Table I.1 Cross-tabulations Intentions * Mode Use, Tourists, Pre-and Post-Reform

| | | Intentions *Mode Use Pre-Reform | | | | | Intentions * Mode Use Post-Reform | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Private Coaches | Buses | Hired Car | Other | Total | Private Coaches | Buses | Hired Car | Other | Total |
| Yes | Count | 46 | 202 | 52 | 13 | 313 | 9 | 242 | 48 | 28 | 327 |
| | Expected Count | 48.1 | 171.1 | 74.9 | 18.9 | 313.0 | 7.6 | 225.3 | 65.2 | 28.8 | 327.0 |
| No | Count | 13 | 14 | 41 | 11 | 79 | 0 | 24 | 29 | 6 | 59 |
| | Expected Count | 12.1 | 43.2 | 18.9 | 4.8 | 79.0 | 1.4 | 40.7 | 11.8 | 5.2 | 59.0 |
| Unsure | Count | 2 | 1 | 2 | 0 | 5 | | | | | |
| | Expected Count | .8 | 2.7 | 1.2 | .3 | 5.0 | | | | | |

## Table I.2 Cross-tabulations Intentions * Age, Tourists, Pre-and Post-Reform

| | | Intentions * Age Pre-Reform | | | | | | | Intentions * Age Post-Reform | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 60+ | Total | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 60+ | Total |
| Yes | Count | 54 | 59 | 68 | 57 | 29 | 46 | 313 | 75 | 107 | 49 | 42 | 28 | 26 | 327 |
| | Expected Count | 44.2 | 59.9 | 67.0 | 71.0 | 28.4 | 42.6 | 313.0 | 66.1 | 106.7 | 56.8 | 45.7 | 28.0 | 23.7 | 327.0 |
| No | Count | 1 | 16 | 16 | 31 | 7 | 8 | 79 | 3 | 19 | 18 | 12 | 5 | 2 | 59 |
| | Expected Count | 11.1 | 15.1 | 16.9 | 17.9 | 7.2 | 10.7 | 79.0 | 11.9 | 19.3 | 10.2 | 8.3 | 5.0 | 4.3 | 59.0 |
| Unsure | Count | 1 | 1 | 1 | 2 | 0 | 0 | 5 | 78 | 126 | 67 | 54 | 33 | 28 | 386 |
| | Expected Count | .7 | 1.0 | 1.1 | 1.1 | .5 | .7 | 5.0 | 78.0 | 126.0 | 67.0 | 54.0 | 33.0 | 28.0 | 386.0 |

## Table I.3 Cross-tabulations Age Groups * Mode Use, Tourists, Post-Reform

| | | Age Groups * Mode Use Tourists, Post-Reform | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 60+ | |
| Private Coaches | Count | 4 | 1 | 0 | 0 | 4 | 0 | 9 |
| | Expected Count | 1.8 | 2.9 | 1.6 | 1.2 | .8 | .7 | 9.0 |
| Buses | Count | 66 | 97 | 41 | 28 | 15 | 21 | 268 |
| | Expected Count | 54.3 | 87.3 | 46.7 | 37.1 | 22.7 | 19.9 | 268.0 |
| Hired Car | Count | 4 | 15 | 22 | 22 | 8 | 6 | 77 |
| | Expected Count | 15.6 | 25.1 | 13.4 | 10.7 | 6.5 | 5.7 | 77.0 |
| Other | Count | 5 | 14 | 5 | 4 | 6 | 2 | 36 |
| | Expected Count | 7.3 | 11.7 | 6.3 | 5.0 | 3.0 | 2.7 | 36.0 |

## Table I.4 Cross-tabulations Intentions * Information, Maltese Residents, Non-Bus Users, Post-Reform

| | | Intentions * Information, Maltese Residents, Post-Reform | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Worst | 2 | 3 | 4 | Best | Don't Know | Total |
| Use bus already | Count | 1 | 0 | 1 | 0 | 1 | 2 | 5 |
| | Expected Count | .1 | .4 | 1.0 | .8 | 1.3 | 1.4 | 5.0 |
| Yes | Count | 1 | 6 | 20 | 13 | 21 | 6 | 67 |
| | Expected Count | 1.8 | 5.0 | 13.5 | 11.3 | 17.3 | 18.3 | 67.0 |
| No | Count | 5 | 14 | 33 | 32 | 47 | 65 | 196 |
| | Expected Count | 5.1 | 14.6 | 39.5 | 32.9 | 50.5 | 53.4 | 196.0 |

Table I.5 Cross-tabulations Intentions * Impact on the Environment, Maltese Residents, Non-Bus Users, Post-Reform

**Intentions * Impact on the Environment, Maltese Residents, Post-Reform**

| | | Worst | 2 | 3 | 4 | Best | Don't Know | Total |
|---|---|---|---|---|---|---|---|---|
| Use bus already | Count | 0 | 1 | 0 | 0 | 1 | 3 | 5 |
| | Expected Count | .1 | .2 | .5 | .4 | 1.9 | 1.8 | 5.0 |
| Yes | Count | 1 | 2 | 12 | 5 | 38 | 9 | 67 |
| | Expected Count | 1.3 | 2.8 | 6.5 | 6.0 | 26.0 | 24.5 | 67.0 |
| No | Count | 4 | 8 | 14 | 19 | 65 | 86 | 196 |
| | Expected Count | 3.7 | 8.0 | 19.0 | 17.6 | 76.1 | 71.7 | 196.0 |

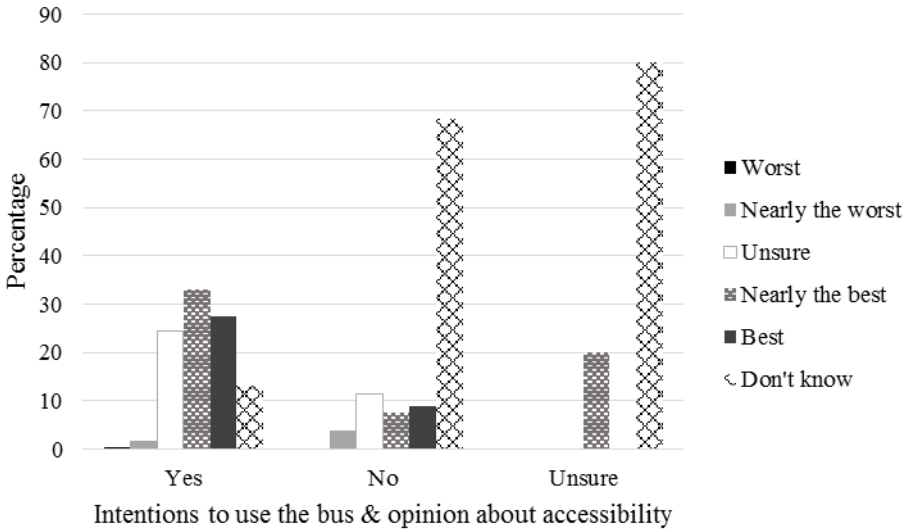



Figure I.1 Intentions to use the bus and opinion about accessibility – Tourists, pre-reform

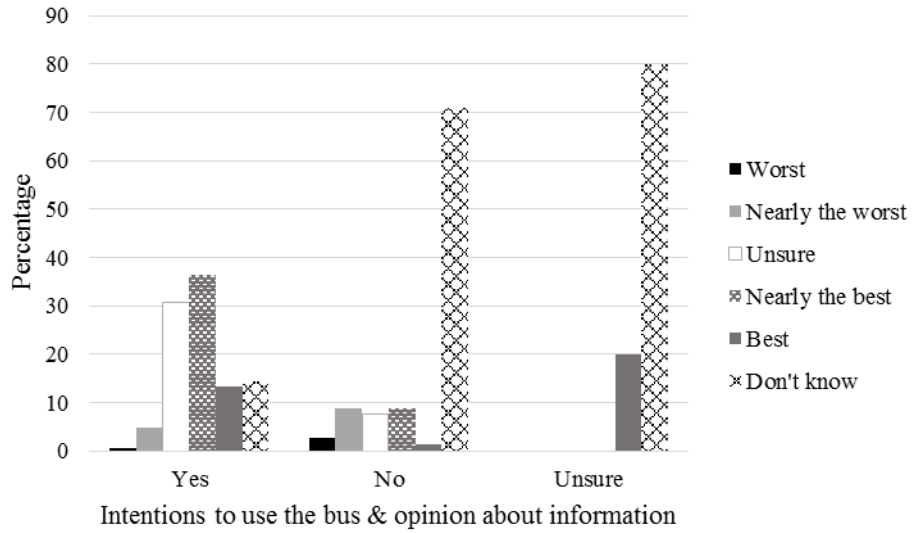



Figure I.2 Intentions to use the bus and opinion about information – Tourists, pre-reform

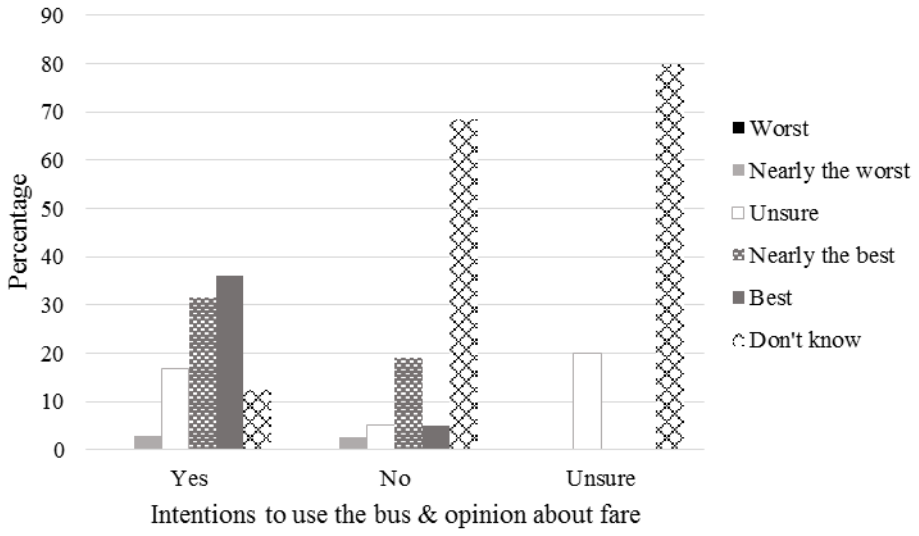



Figure I.3 Intentions to use the bus and opinion about fare – Tourists, pre-reform

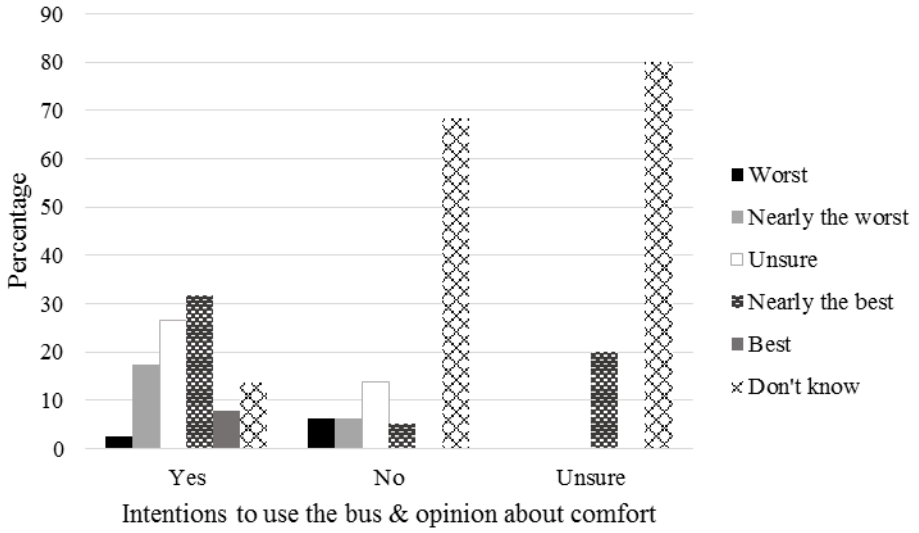



Figure I.4 Intentions to use the bus and opinion about comfort – Tourists, pre-reform

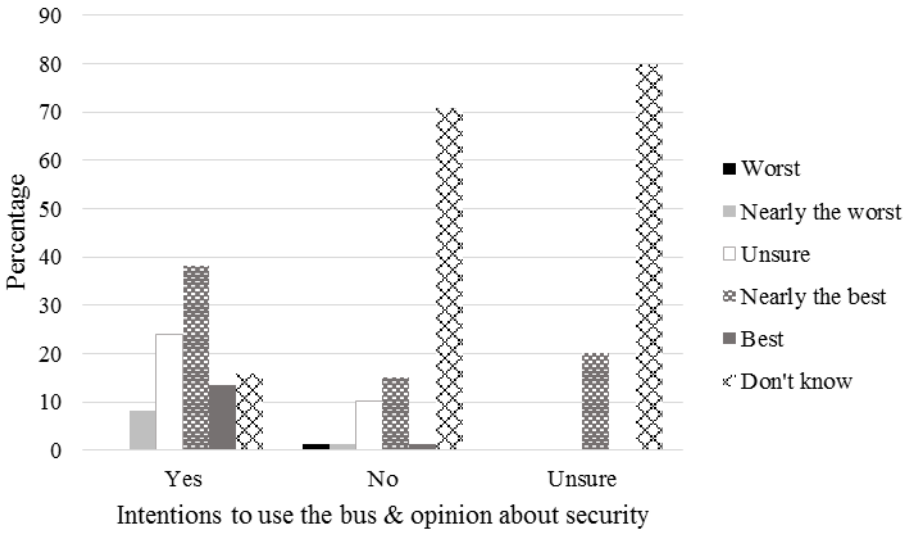



Figure I.5 Intentions to use the bus and opinion about security – Tourists, pre-reform

Table I.6 Cross-tabulations Intentions * Time, Tourists, Pre-and Post-Reform

| | | Intention * Time Pre-Reform | | | | | | | Intention * Time Post-Reform | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Worst | 2 | 3 | 4 | Best | Don't Know | Total | Worst | 2 | 3 | 4 | Best | Don't Know | Total |
| Yes | Count | 2 | 52 | 92 | 100 | 25 | 43 | 314 | 49 | 59 | 75 | 80 | 34 | 30 | 327 |
| | Expected Count | 7.1 | 45.0 | 78.9 | 82.8 | 19.7 | 80.5 | 314.0 | 51.7 | 56.8 | 66.1 | 70.3 | 37.3 | 44.9 | 327.0 |
| No | Count | 7 | 4 | 8 | 5 | 0 | 55 | 79 | 12 | 8 | 3 | 3 | 10 | 23 | 59 |
| | Expected Count | 1.8 | 11.3 | 19.8 | 20.8 | 5.0 | 20.2 | 79.0 | 9.3 | 10.2 | 11.9 | 12.7 | 6.7 | 8.1 | 59.0 |
| Unsure | Count | 0 | 1 | 0 | 0 | 0 | 4 | 5 | | | | | | | |
| | Expected Count | .1 | .7 | 1.3 | 1.3 | .3 | 1.3 | 5.0 | | | | | | | |

Table I.7 Cross-tabulations Intentions * Customer Care, Pre-and Post-Reform

| | | Intentions * Customer Care Pre-Reform | | | | | | | Intentions * Customer Care Post-Reform | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Worst | 2 | 3 | 4 | Best | Don't Know | Total | Worst | 2 | 3 | 4 | Best | Don't Know | Total |
| Yes | Count | 7 | 28 | 96 | 104 | 35 | 44 | 314 | 3 | 22 | 87 | 127 | 55 | 33 | 327 |
| | Expected Count | 9.5 | 25.2 | 84.4 | 86.0 | 27.6 | 81.3 | 314.0 | 4.2 | 24.6 | 83.9 | 113.5 | 52.5 | 48.3 | 327.0 |
| No | Count | 5 | 4 | 10 | 5 | 0 | 55 | 79 | 2 | 7 | 12 | 7 | 7 | 24 | 59 |
| | Expected Count | 2.4 | 6.4 | 21.2 | 21.6 | 6.9 | 20.4 | 79.0 | .8 | 4.4 | 15.1 | 20.5 | 9.5 | 8.7 | 59.0 |
| Unsure | Count | 0 | 0 | 1 | 0 | 0 | 4 | 5 | | | | | | | |
| | Expected Count | .2 | .4 | 1.3 | 1.4 | .4 | 1.3 | 5.0 | | | | | | | |

Table I.8 Cross-tabulations Intentions * Impact on the Environment, Pre-and Post-Reform

| | | Intentions * Impact on the Environment, Pre-Reform | | | | | | | Intentions * Impact on the Environment, Post-Reform | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Worst | 2 | 3 | 4 | Best | Don't Know | Total | Worst | 2 | 3 | 4 | Best | Don't Know | Total |
| Yes | Count | 36 | 73 | 77 | 49 | 17 | 62 | 314 | 3 | 10 | 63 | 90 | 54 | 107 | 327 |
| | Expected Count | 34.7 | 71.8 | 63.9 | 38.7 | 13.4 | 91.5 | 314.0 | 3.4 | 9.3 | 64.4 | 82.2 | 48.3 | 119.4 | 327.0 |
| No | Count | 8 | 17 | 4 | 0 | 0 | 50 | 79 | 1 | 1 | 13 | 7 | 3 | 34 | 59 |
| | Expected Count | 8.7 | 18.1 | 16.1 | 9.7 | 3.4 | 23.0 | 79.0 | .6 | 1.7 | 11.6 | 14.8 | 8.7 | 21.6 | 59.0 |
| Unsure | Count | 0 | 1 | 0 | 0 | 0 | 4 | 5 | | | | | | | |
| | Expected Count | .6 | 1.1 | 1.0 | .6 | .2 | 1.5 | 5.0 | | | | | | | |

Table I.9 Cross-tabulations Intentions * Preferred Amount of Bus Connections, Tourists Pre-and Post-Reform

| Intention * Preferred Amount of Bus Connections, Tourists Pre-Reform | | | | | | | Intention * Preferred Amount of Bus Connections, Tourists Post-Reform | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 connection | 2 connections | 3 connections | 4 connections | Total | 1 connection | 2 connections | 3 connections | 4 connections | Total |
| Yes | Count | 38 | 216 | 28 | 29 | 311 | 116 | 140 | 35 | 5 | 296 |
| | Expected Count | 57.6 | 201.3 | 26.8 | 25.3 | 311.0 | 117.3 | 138.7 | 35.6 | 4.4 | 296.0 |
| No | Count | 34 | 36 | 6 | 2 | 78 | 16 | 16 | 5 | 0 | 37 |
| | Expected Count | 14.5 | 50.5 | 6.7 | 6.3 | 78.0 | 14.7 | 17.3 | 4.4 | .6 | 37.0 |
| Unsure | Count | 1 | 3 | 0 | 1 | 5 | | | | | |
| | Expected Count | .9 | 3.2 | .4 | .4 | 5.0 | | | | | |

Table I.10 Cross-tabulations Mode use * opinion about fare, Maltese Residents Pre-Reform

**Mode use * Fare**

| | | Worst | 2 | 3 | 4 | Best | Don't Know | Total |
|---|---|---|---|---|---|---|---|---|
| Car | Count | 4 | 11 | 42 | 68 | 56 | 8 | 189 |
| | Expected Count | 2.9 | 7.8 | 34.4 | 60.6 | 79.0 | 4.4 | 189.0 |
| Bus | Count | 1 | 4 | 15 | 27 | 68 | 0 | 115 |
| | Expected Count | 1.8 | 4.7 | 20.9 | 36.9 | 48.1 | 2.7 | 115.0 |
| Other | Count | 1 | 1 | 14 | 30 | 39 | 1 | 86 |
| | Expected Count | 1.3 | 3.5 | 15.7 | 27.6 | 35.9 | 2.0 | 86.0 |

Table I.11 Cross-tabulations Mode use * opinion about Impact on the Environment, Maltese Residents Pre-Reform

**Mode Use * Impact on the Environment**

| | | Worst | 2 | 3 | 4 | Best | Don't Know | Total |
|---|---|---|---|---|---|---|---|---|
| Car | Count | 51 | 50 | 35 | 31 | 8 | 14 | 189 |
| | Expected Count | 48.0 | 48.9 | 32.5 | 25.7 | 11.1 | 22.8 | 189.0 |
| Bus | Count | 26 | 37 | 17 | 14 | 9 | 12 | 115 |
| | Expected Count | 29.2 | 29.8 | 19.8 | 15.6 | 6.8 | 13.9 | 115.0 |
| Other | Count | 22 | 14 | 15 | 8 | 6 | 21 | 86 |
| | Expected Count | 21.8 | 22.3 | 14.8 | 11.7 | 5.1 | 10.4 | 86.0 |

Table I.12 Cross-tabulations Mode use * opinion about Customer Care, Maltese residents Post-Reform

**Mode Use * Customer Care**

| | | Worst | 2 | 3 | 4 | Best | Don’t Know | Total |
|---|---|---|---|---|---|---|---|---|
| Car | Count | 6 | 11 | 37 | 53 | 63 | 82 | 252 |
| | Expected Count | 6.4 | 13.5 | 42.5 | 50.9 | 77.3 | 61.2 | 252.0 |
| Bus | Count | 4 | 10 | 28 | 25 | 53 | 7 | 127 |
| | Expected Count | 3.2 | 6.8 | 21.4 | 25.7 | 39.0 | 30.9 | 127.0 |
| Other | Count | 0 | 0 | 1 | 1 | 4 | 6 | 12 |
| | Expected Count | .3 | .6 | 2.0 | 2.4 | 3.7 | 2.9 | 12.0 |

Table I.13 Cross-tabulations Mode use * opinion about Comfort, Maltese residents post-reform

**Mode Use * Comfort**

| | | Worst | 2 | 3 | 4 | Best | Don't Know | Total |
|---|---|---|---|---|---|---|---|---|
| Car | Count | 3 | 10 | 38 | 37 | 114 | 50 | 252 |
| | Expected Count | 5.2 | 16.1 | 42.5 | 37.4 | 116.0 | 34.8 | 252.0 |
| Bus | Count | 5 | 15 | 26 | 19 | 59 | 3 | 127 |
| | Expected Count | 2.6 | 8.1 | 21.4 | 18.8 | 58.5 | 17.5 | 127.0 |
| Other | Count | 0 | 0 | 2 | 2 | 7 | 1 | 12 |
| | Expected Count | .2 | .8 | 2.0 | 1.8 | 5.5 | 1.7 | 12.0 |

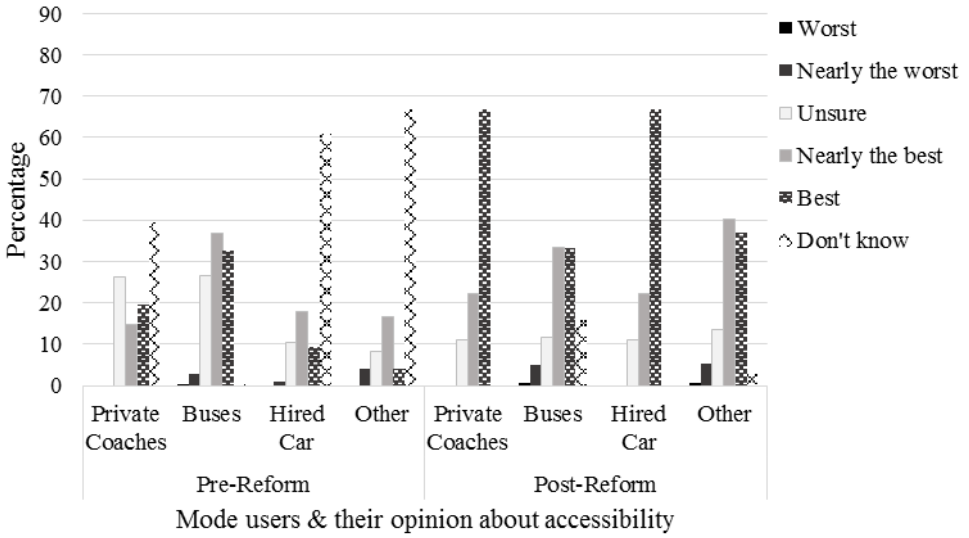



Figure I.6 Mode use and opinion about accessibility – Tourists, pre-and post-reform

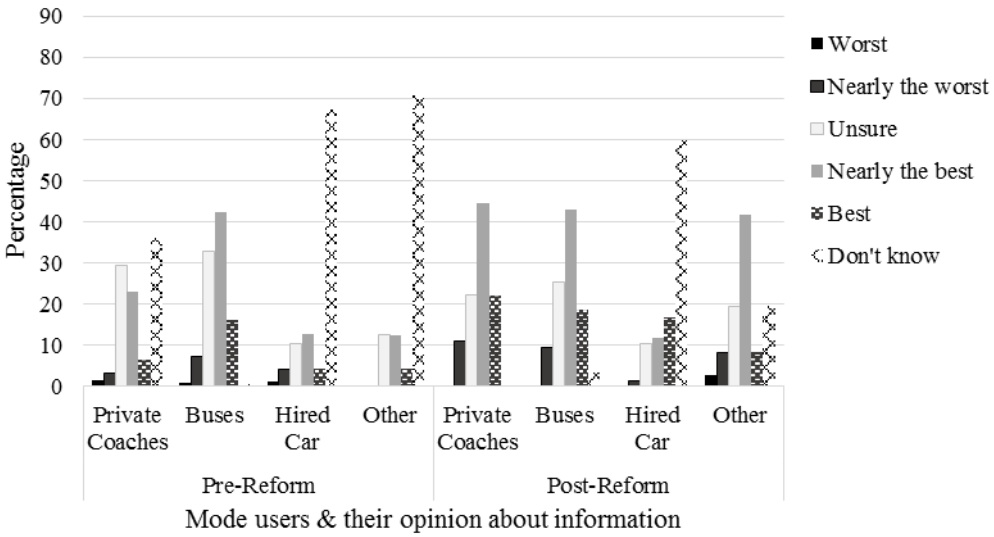



Figure I.7 Mode use and opinion about information – Tourists, pre-and post-reform

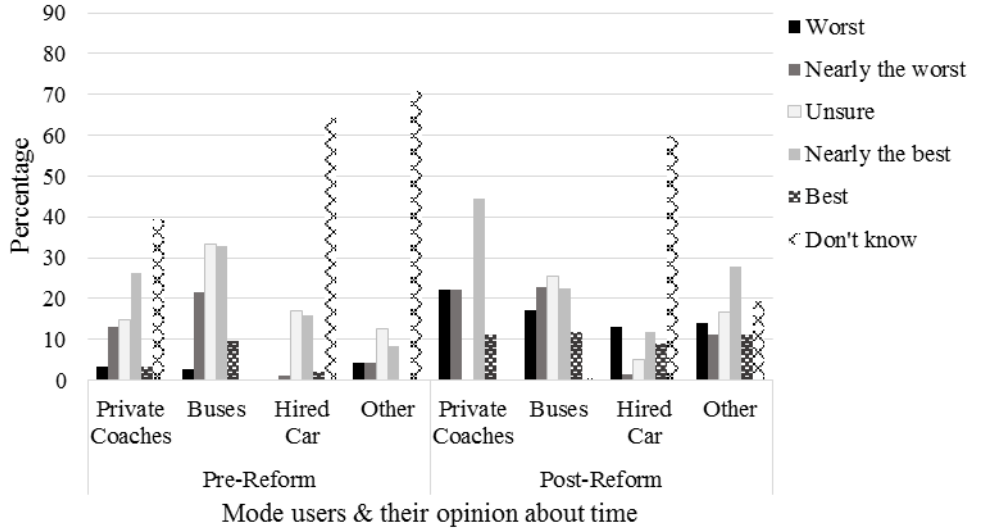



Figure I.8 Mode use and opinion about time – Tourists, pre-and post-reform

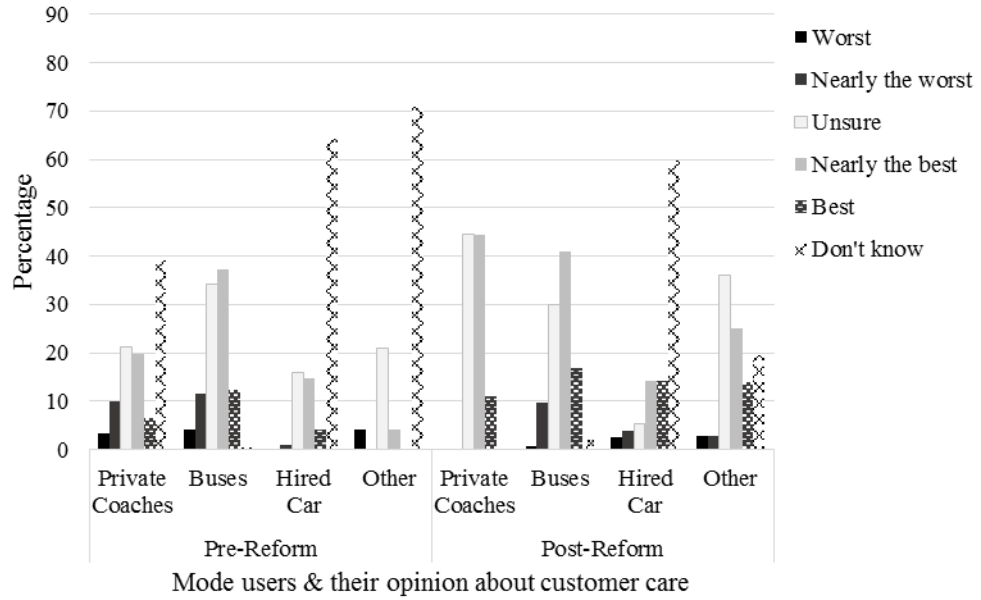



Figure I.9 Mode use and opinion about customer care

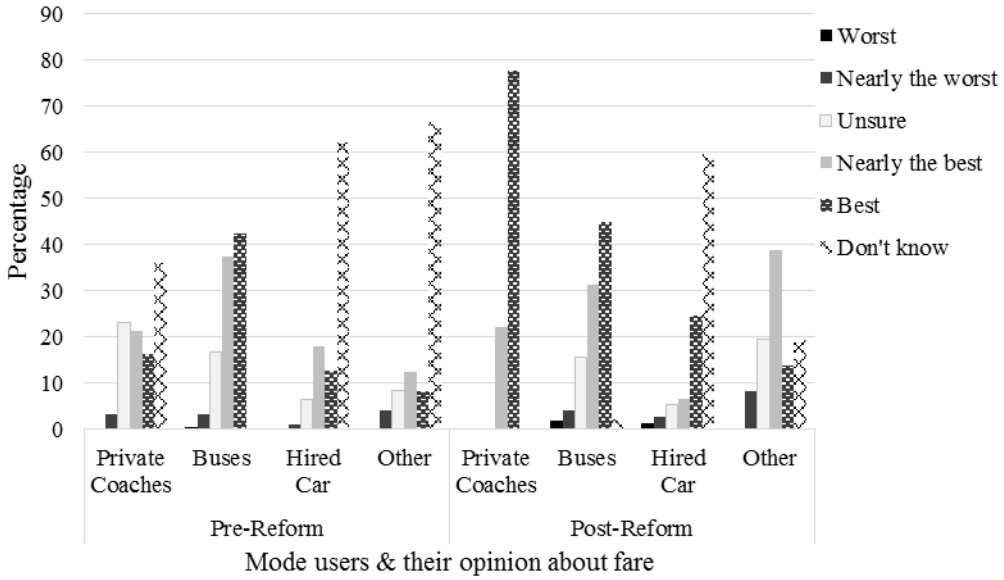



Figure I.10 Mode use and opinion about fare

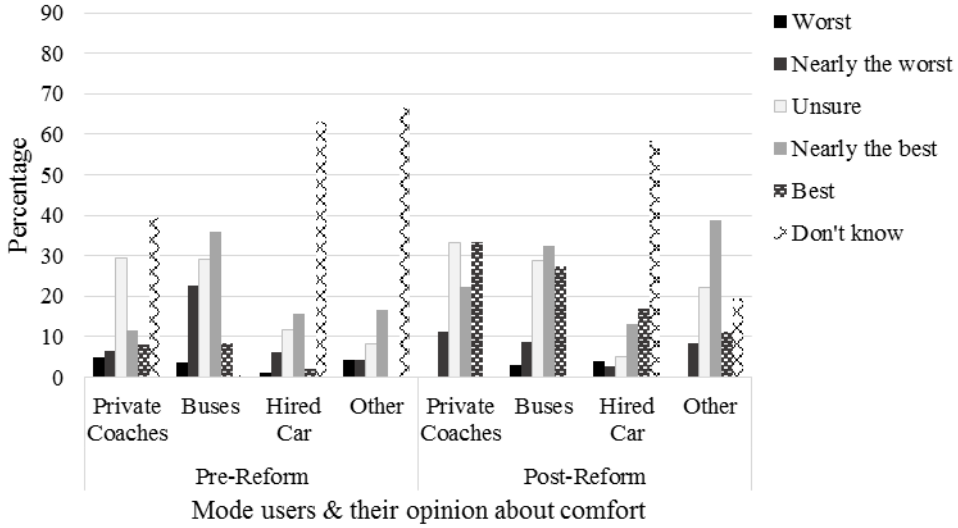



Figure I.11 Mode use and opinion about comfort

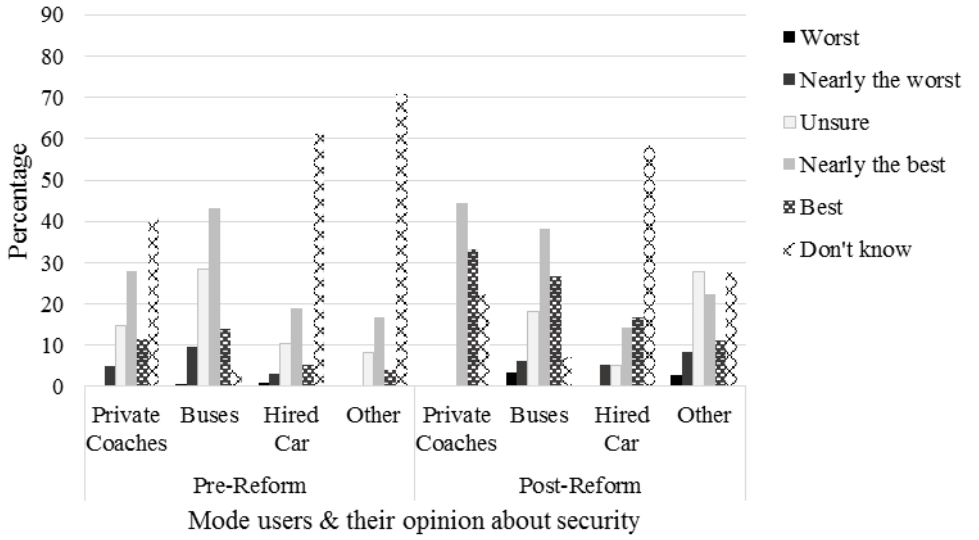



Figure I.12 Mode use and opinion about security

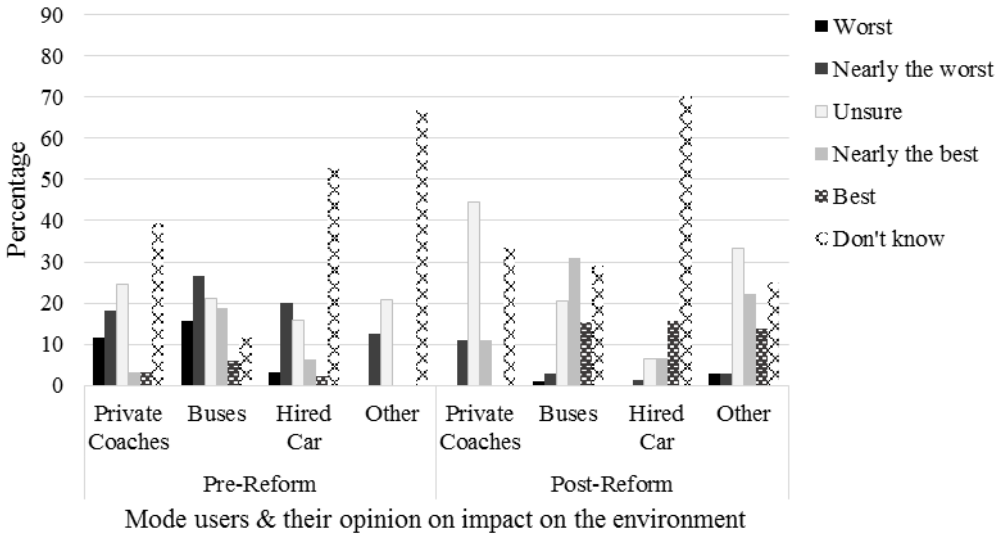



Figure I.13 Mode use and opinion about impact on the environment

Table I.14 Cross-tabulations Age groups * opinion about accessibility, Tourists Pre-reform

**Age Groups * Accessibility**

| | | Worst | 2 | 3 | 4 | Best | Don't Know | Total |
|---|---|---|---|---|---|---|---|---|
| 11-20 | Count | 0 | 1 | 22 | 20 | 9 | 4 | 56 |
| | Expected Count | .1 | 1.1 | 12.1 | 15.5 | 13.1 | 14.0 | 56.0 |
| 21-30 | Count | 1 | 0 | 13 | 21 | 19 | 22 | 76 |
| | Expected Count | .2 | 1.5 | 16.5 | 21.1 | 17.8 | 19.0 | 76.0 |
| 31-40 | Count | 0 | 2 | 22 | 22 | 16 | 23 | 85 |
| | Expected Count | .2 | 1.7 | 18.4 | 23.6 | 19.9 | 21.2 | 85.0 |
| 41-50 | Count | 0 | 3 | 13 | 20 | 19 | 35 | 90 |
| | Expected Count | .2 | 1.8 | 19.5 | 24.9 | 21.1 | 22.4 | 90.0 |
| 51-60 | Count | 0 | 1 | 5 | 12 | 9 | 9 | 36 |
| | Expected Count | .1 | .7 | 7.8 | 10.0 | 8.4 | 9.0 | 36.0 |
| 60+ | Count | 0 | 1 | 11 | 15 | 21 | 6 | 54 |
| | Expected Count | .1 | 1.1 | 11.7 | 15.0 | 12.6 | 13.5 | 54.0 |

Table I.15 Cross-tabulations Age groups * opinion about information, Tourists Pre-reform

**Age Groups * Information**

| | | Worst | 2 | 3 | 4 | Best | Don't Know | Total |
|---|---|---|---|---|---|---|---|---|
| 11-20 | Count | 2 | 4 | 24 | 17 | 4 | 5 | 56 |
| | Expected Count | .6 | 3.1 | 14.4 | 17.1 | 6.2 | 14.7 | 56.0 |
| 21-30 | Count | 0 | 3 | 24 | 24 | 4 | 21 | 76 |
| | Expected Count | .8 | 4.2 | 19.5 | 23.2 | 8.4 | 19.9 | 76.0 |
| 31-40 | Count | 0 | 7 | 23 | 21 | 9 | 25 | 85 |
| | Expected Count | .9 | 4.7 | 21.8 | 25.9 | 9.4 | 22.3 | 85.0 |
| 41-50 | Count | 2 | 4 | 17 | 20 | 11 | 36 | 90 |
| | Expected Count | .9 | 5.0 | 23.1 | 27.4 | 10.0 | 23.6 | 90.0 |
| 51-60 | Count | 0 | 2 | 6 | 17 | 1 | 10 | 36 |
| | Expected Count | .4 | 2.0 | 9.2 | 11.0 | 4.0 | 9.4 | 36.0 |
| 60+ | Count | 0 | 2 | 8 | 22 | 15 | 7 | 54 |
| | Expected Count | .5 | 3.0 | 13.9 | 16.5 | 6.0 | 14.1 | 54.0 |

Table I.16 Cross-tabulations Age groups * opinion about fare, Tourists Pre-Reform

**Age Group * Fare**

| | | Worst | 2 | 3 | 4 | Best | Don’t Know | Total |
|---|---|---|---|---|---|---|---|---|
| 11-20 | Count | 1 | 4 | 7 | 27 | 14 | 3 | 56 |
| | Expected Count | .1 | 1.6 | 8.2 | 16.1 | 16.4 | 13.7 | 56.0 |
| 21-30 | Count | 0 | 2 | 14 | 18 | 21 | 21 | 76 |
| | Expected Count | .2 | 2.1 | 11.1 | 21.8 | 22.2 | 18.6 | 76.0 |
| 31-40 | Count | 0 | 3 | 11 | 27 | 20 | 24 | 85 |
| | Expected Count | .2 | 2.4 | 12.4 | 24.4 | 24.8 | 20.8 | 85.0 |
| 41-50 | Count | 0 | 1 | 9 | 20 | 24 | 36 | 90 |
| | Expected Count | .2 | 2.5 | 13.1 | 25.8 | 26.3 | 22.0 | 90.0 |
| 51-60 | Count | 0 | 0 | 7 | 10 | 11 | 8 | 36 |
| | Expected Count | .1 | 1.0 | 5.3 | 10.3 | 10.5 | 8.8 | 36.0 |
| 60+ | Count | 0 | 1 | 10 | 12 | 26 | 5 | 54 |
| | Expected Count | .1 | 1.5 | 7.9 | 15.5 | 15.8 | 13.2 | 54.0 |

Table I.17 Cross-tabulations Age groups * opinion about security, Tourists Pre-Reform

**Age Group * Security**

| | | Worst | 2 | 3 | 4 | Best | Don't Know | Total |
|---|---|---|---|---|---|---|---|---|
| 11-20 | Count | 0 | 11 | 16 | 20 | 5 | 4 | 56 |
| | Expected Count | .3 | 3.8 | 11.7 | 18.8 | 6.1 | 15.4 | 56.0 |
| 21-30 | Count | 0 | 4 | 13 | 31 | 6 | 22 | 76 |
| | Expected Count | .4 | 5.2 | 15.9 | 25.5 | 8.2 | 20.9 | 76.0 |
| 31-40 | Count | 1 | 7 | 22 | 25 | 6 | 24 | 85 |
| | Expected Count | .4 | 5.8 | 17.8 | 28.5 | 9.2 | 23.3 | 85.0 |
| 41-50 | Count | 0 | 2 | 16 | 25 | 8 | 39 | 90 |
| | Expected Count | .5 | 6.1 | 18.8 | 30.2 | 9.7 | 24.7 | 90.0 |
| 51-60 | Count | 1 | 3 | 6 | 12 | 5 | 9 | 36 |
| | Expected Count | .2 | 2.4 | 7.5 | 12.1 | 3.9 | 9.9 | 36.0 |
| 60+ | Count | 0 | 0 | 10 | 20 | 13 | 11 | 54 |
| | Expected Count | .3 | 3.7 | 11.3 | 18.1 | 5.8 | 14.8 | 54.0 |

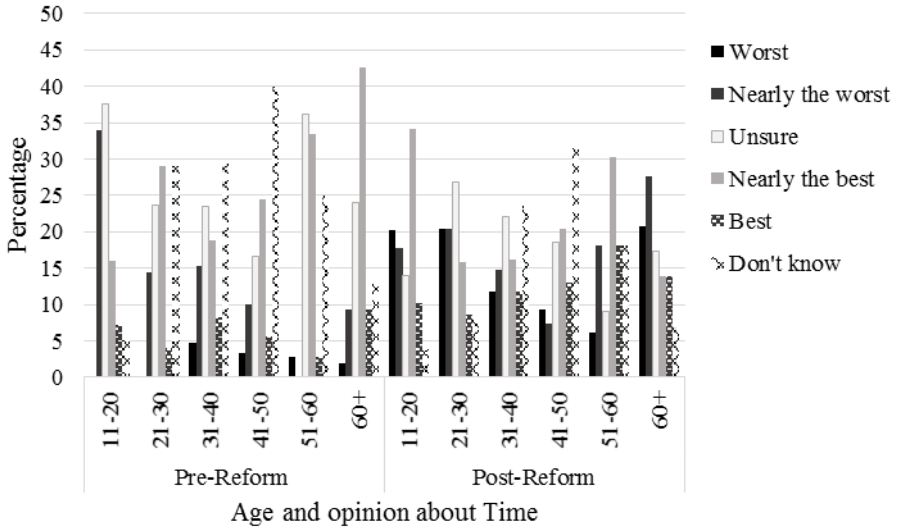



Figure I.14 Age and opinion about time – Tourists, pre-and post-reform

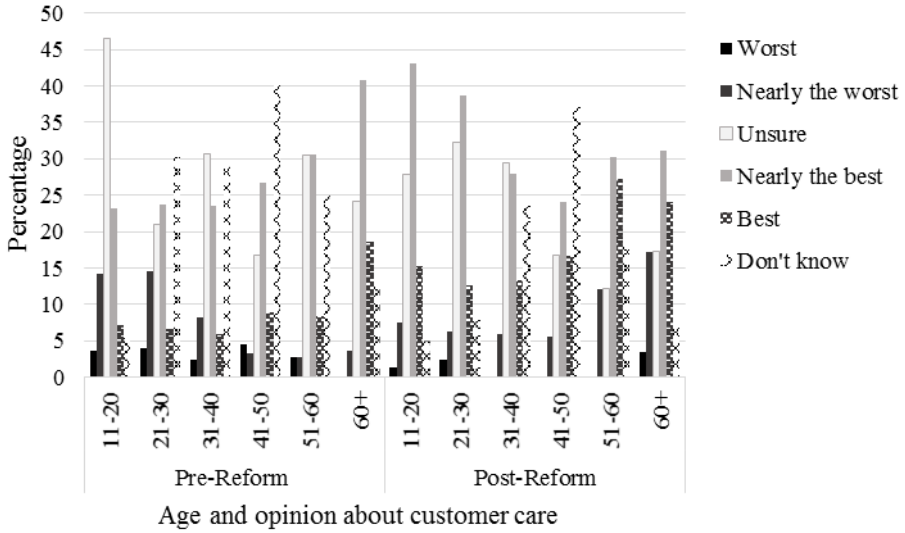



Figure I.15 Age and opinion about customer care – Tourists, pre-and post-reform

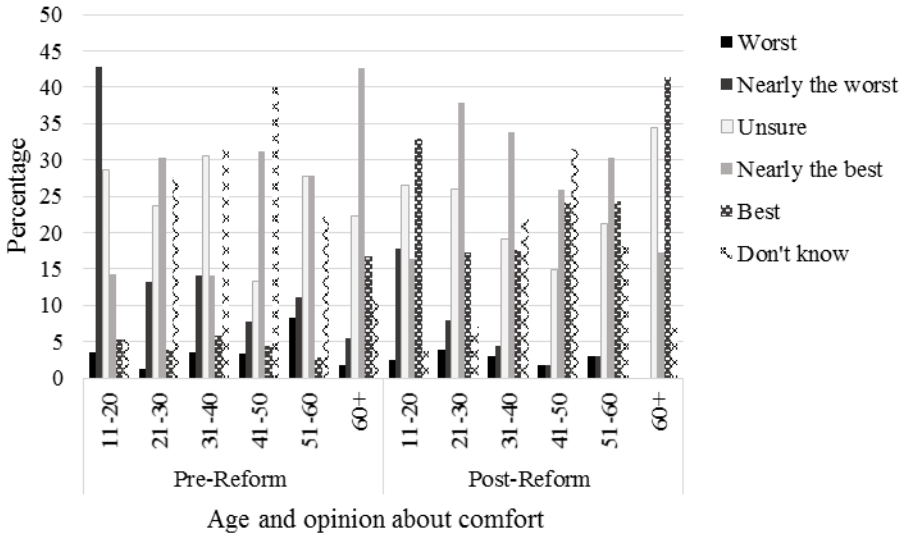



Figure I.16 Age and opinion about comfort – Tourists, pre-and post-reform

Table I.18 Mann-Whitney U test results for 60+ age group, Tourists, Pre-reform

| Test Statistics[a] | | Test Statistics[b] | | Test Statistics[c] | | Test Statistics[d] | | Test Statistics[e] | |
|---|---|---|---|---|---|---|---|---|---|
| | Accommodating | | Accommodating | | Accommodating | | Accommodating | | Accommodating |
| Mann-Whitney U | 274.000 | Mann-Whitney U | 606.500 | Mann-Whitney U | 434.500 | Mann-Whitney U | 580.500 | Mann-Whitney U | 324.000 |
| Wilcoxon W | 527.000 | Wilcoxon W | 1734.500 | Wilcoxon W | 1760.500 | Wilcoxon W | 1855.500 | Wilcoxon W | 1452.000 |
| Z | -2.209 | Z | -2.533 | Z | -4.434 | Z | -3.113 | Z | -5.030 |
| Asymp. Sig. (2-tailed) | .027 | Asymp. Sig. (2-tailed) | .011 | Asymp. Sig. (2-tailed) | 0.0001 | Asymp. Sig. (2-tailed) | 0.002 | Asymp. Sig. (2-tailed) | 0.0001 |
| a. Grouping Variable: Age - 60+ & 51-60 | | b. Grouping Variable: Age - 60+ & 41-50 | | c. Grouping Variable: Age - 60+ & 31-40 | | d. Grouping Variable: Age - 60+ & 21-30 | | e. Grouping Variable: Age - 60+ & 11-20 | |

Table I.19 Mann-Whitney U test results for 51-60 age group, Tourists, Pre-reform

| Test Statistics[a] Accommodating | | Test Statistics[b] Accommodating | | Test Statistics[c] Accommodating | | Test Statistics[d] Accommodating | |
|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 494.000 | Mann-Whitney U | 349.500 | Mann-Whitney U | 481.500 | Mann-Whitney U | 280.500 |
| Wilcoxon W | 1622.000 | Wilcoxon W | 1675.500 | Wilcoxon W | 1756.500 | Wilcoxon W | 1408.500 |
| Z | -0.296 | Z | -2.543 | Z | -0.837 | Z | -3.045 |
| Asymp. Sig. (2-tailed) | .767 | Asymp. Sig. (2-tailed) | 0.011 | Asymp. Sig. (2-tailed) | 0.402 | Asymp. Sig. (2-tailed) | 0.002 |
| a. Grouping Variable: Age - 51-60 & 41-50 | | b. Grouping Variable: Age - 51-60 & 31-40 | | c. Grouping Variable: Age - 51-60 & 21-30 | | d. Grouping Variable: Age - 51-60 & 11-20 | |

Table I.20 Mann-Whitney U test results for 41-50 age group, Tourists, Pre-reform

| Test Statistics[a] Accommodating | | Test Statistics[b] Accommodating | | Test Statistics[c] Accommodating | |
|---|---|---|---|---|---|
| Mann-Whitney U | 938.000 | Mann-Whitney U | 1134.000 | Mann-Whitney U | 761.500 |
| Wilcoxon W | 2264.000 | Wilcoxon W | 2409.000 | Wilcoxon W | 1889.500 |
| Z | -1.852 | Z | -0.296 | Z | -2.549 |
| Asymp. Sig. (2-tailed) | 0.064 | Asymp. Sig. (2-tailed) | 0.767 | Asymp. Sig. (2-tailed) | 0.0090 |
| a. Grouping Variable: Age - 41-50 & 31-40 | | b. Grouping Variable: Age - 41-50 & 21-30 | | c. Grouping Variable: Age - 41-50 & 11-20 | |

Table I.21 Mann-Whitney U test results for 21-30 age group, Tourists, Pre-reform

| Test Statistics[a] Accommodating | |
|---|---|
| Mann-Whitney U | 819.000 |
| Wilcoxon W | 1947.000 |
| Z | -2.570 |
| Asymp. Sig. (2-tailed) | 0.010 |
| a. Grouping Variable: Age - 21-30 & 11-20 | |

Table I.22 Mann-Whitney U test results for 31-40 age group, Maltese residents, Post-reform

| Test Statistics[a] | Bus service | Test Statistics[b] | Bus service | Test Statistics[c] | Bus service | Test Statistics[d] | Bus service | Test Statistics[e] | Bus service |
|---|---|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 407.500 | Mann-Whitney U | 768.500 | Mann-Whitney U | 143.000 | Mann-Whitney U | 277.500 | Mann-Whitney U | 133.000 |
| Wilcoxon W | 1268.500 | Wilcoxon W | 3114.500 | Wilcoxon W | 333.000 | Wilcoxon W | 773.500 | Wilcoxon W | 343.000 |
| Z | -0.896 | Z | -0.124 | Z | -1.909 | Z | -1.383 | Z | -2.363 |
| Asymp. Sig. (2-tailed) | .370 | Asymp. Sig. (2-tailed) | .902 | Asymp. Sig. (2-tailed) | 0.056 | Asymp. Sig. (2-tailed) | 0.167 | Asymp. Sig. (2-tailed) | 0.018 |
| a. Grouping Variable: Age - 31-40 & 41-50 | | b. Grouping Variable: Age - 31-40 & 60+ | | c. Grouping Variable: Age - 31-40 & 21-30 | | d. Grouping Variable: Age - 31-40 & 51-60 | | e. Grouping Variable: Age - 31-40 & 11-20 | |

Table I.23 Mann-Whitney U test results for 60+ age group, Maltese residents, Post-reform

| Test Statistics[a] | Bus service | Test Statistics[b] | Bus service | Test Statistics[c] | Bus service | Test Statistics[d] | Bus service |
|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 376.000 | Mann-Whitney U | 833.000 | Mann-Whitney U | 416.000 | Mann-Whitney U | 1169.500 |
| Wilcoxon W | 586.000 | Wilcoxon W | 1329.000 | Wilcoxon W | 606.000 | Wilcoxon W | 2030.500 |
| Z | -3.029 | Z | -1.669 | Z | -2.365 | Z | -1.406 |
| Asymp. Sig. (2-tailed) | .002 | Asymp. Sig. (2-tailed) | 0.095 | Asymp. Sig. (2-tailed) | 0.018 | Asymp. Sig. (2-tailed) | 0.160 |
| a. Grouping Variable: Age - 60+ & 11-20 | | b. Grouping Variable: Age - 60+ & 51-60 | | c. Grouping Variable: Age - 60+ & 21-30 | | d. Grouping Variable: Age - 60+ & 41-50 | |

Table I.24 Mann-Whitney U test results for 41-50 age group, Maltese residents, Post-reform

| Test Statistics[a] | Bus service | Test Statistics[b] | Bus service | Test Statistics[c] | Bus service |
|---|---|---|---|---|---|
| Mann-Whitney U | 309.000 | Mann-Whitney U | 594.500 | Mann-Whitney U | 304.000 |
| Wilcoxon W | 499.000 | Wilcoxon W | 1090.500 | Wilcoxon W | 514.000 |
| Z | -1.279 | Z | -0.466 | Z | -1.629 |
| Asymp. Sig. (2-tailed) | 0.201 | Asymp. Sig. (2-tailed) | 0.641 | Asymp. Sig. (2-tailed) | 0.103 |
| a. Grouping Variable: Age - 41-50 & 21-30 | | b. Grouping Variable: Age - 41-50 & 51-60 | | c. Grouping Variable: Age - 41-50 & 11-20 | |

Table I.25 Mann-Whitney U test results for 21-30 age group, Maltese residents, Post-reform

| Test Statistics[a] | Bus service |
|---|---|
| Mann-Whitney U | 240.000 |
| Wilcoxon W | 430.000 |
| Z | -1.089 |
| Asymp. Sig. (2-tailed) | 0.28 |
| a. Grouping Variable: Age - 21-30 & 51-60 | |

| Test Statistics[b] | Bus service |
|---|---|
| Mann-Whitney U | 172.000 |
| Wilcoxon W | 382.000 |
| Z | -0.506 |
| Asymp. Sig. (2-tailed) | 0.613 |
| b. Grouping Variable: Age - 21-30 & 11-20 | |

Table I.26 Mann-Whitney U test results for 11-20 age group, Maltese residents, Post-reform

| Test Statistics[a] | Bus service |
|---|---|
| Mann-Whitney U | 226.000 |
| Wilcoxon W | 436.000 |
| Z | -1.621 |
| Asymp. Sig. (2-tailed) | 0.105 |
| a. Grouping Variable: Age - 11-20 & 51-60 | |

Table I.27 Mann-Whitney U test results for 60+ age group, Tourists, Post-reform

| Test Statistics[a] | Endurable |
|---|---|
| Mann-Whitney U | 185.500 |
| Wilcoxon W | 365.500 |
| Z | -0.099 |
| Asymp. Sig. (2-tailed) | .921 |
| a. Grouping Variable: Age - 60+ & 51-60 | |

| Test Statistics[b] | Endurable |
|---|---|
| Mann-Whitney U | 232.500 |
| Wilcoxon W | 667.500 |
| Z | -0.624 |
| Asymp. Sig. (2-tailed) | .532 |
| b. Grouping Variable: Age - 60+ & 41-50 | |

| Test Statistics[c] | Endurable |
|---|---|
| Mann-Whitney U | 245.500 |
| Wilcoxon W | 875.500 |
| Z | -1.306 |
| Asymp. Sig. (2-tailed) | 0.192 |
| c. Grouping Variable: Age - 60+ & 31-40 | |

| Test Statistics[d] | Endurable |
|---|---|
| Mann-Whitney U | 470.500 |
| Wilcoxon W | 3396.500 |
| Z | -2.052 |
| Asymp. Sig. (2-tailed) | 0.04 |
| d. Grouping Variable: Age - 60+ & 21-30 | |

| Test Statistics[e] | Endurable |
|---|---|
| Mann-Whitney U | 269.500 |
| Wilcoxon W | 1350.500 |
| Z | -2.158 |
| Asymp. Sig. (2-tailed) | 0.031 |
| e. Grouping Variable: Age - 60+ & 11-20 | |

Table I.28 Mann-Whitney U test results for 51-60 age group, Tourists, Post-reform

| Test Statistics[a] | Endurable | Test Statistics[b] | Endurable | Test Statistics[c] | Endurable | Test Statistics[d] | Endurable |
|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 252.000 | Mann-Whitney U | 245.000 | Mann-Whitney U | 245.000 | Mann-Whitney U | 287.000 |
| Wilcoxon W | 687.000 | Wilcoxon W | 875.000 | Wilcoxon W | 875.000 | Wilcoxon W | 1368.000 |
| Z | -1.033 | Z | -2.074 | Z | -2.074 | Z | -2.650 |
| Asymp. Sig. (2-tailed) | .302 | Asymp. Sig. (2-tailed) | 0.038 | Asymp. Sig. (2-tailed) | 0.038 | Asymp. Sig. (2-tailed) | 0.008 |
| a. Grouping Variable: Age - 51-60 & 41-50 | | b. Grouping Variable: Age - 51-60 & 31-40 | | c. Grouping Variable: Age - 51-60 & 21-30 | | d. Grouping Variable: Age - 51-60 & 11-20 | |

Table I.29 Mann-Whitney U test results for 41-50 age group, Tourists, Post-reform

| Test Statistics[a] | Endurable | Test Statistics[b] | Endurable | Test Statistics[c] | Endurable |
|---|---|---|---|---|---|
| Mann-Whitney U | 398.500 | Mann-Whitney U | 732.500 | Mann-Whitney U | 480.500 |
| Wilcoxon W | 1028.500 | Wilcoxon W | 3658.500 | Wilcoxon W | 1561.500 |
| Z | -1.470 | Z | -2.648 | Z | -2.029 |
| Asymp. Sig. (2-tailed) | 0.141 | Asymp. Sig. (2-tailed) | 0.008 | Asymp. Sig. (2-tailed) | 0.042 |
| a. Grouping Variable: Age - 41-50 & 31-40 | | b. Grouping Variable: Age - 41-50 & 21-30 | | c. Grouping Variable: Age - 41-50 & 11-20 | |

Table I.30 Mann-Whitney U test results for 31-40 age group, Tourists, Post-reform

| Test Statistics[a] | Endurable | Test Statistics[b] | Endurable |
|---|---|---|---|
| Mann-Whitney U | 116.500 | Mann-Whitney U | 704.000 |
| Wilcoxon W | 4092.500 | Wilcoxon W | 1785.000 |
| Z | -1.038 | Z | -0.963 |
| Asymp. Sig. (2-tailed) | 0.30 | Asymp. Sig. (2-tailed) | 0.336 |
| a. Grouping Variable: Age - 31-40 & 21-30 | | b. Grouping Variable: Age - 31-40 & 11-20 | |

Table I.31 Mann-Whitney U test results for 21-30 age group, Tourists, Post-reform

| Test Statistics[a] | Endurable |
|---|---|
| Mann-Whitney U | 1747.000 |
| Wilcoxon W | 4673.000 |
| Z | -0.005 |
| Asymp. Sig. (2-tailed) | 0.996 |

a. Grouping Variable: Age - 21-30 & 11-20

Table I.32 Mann-Whitney U test results for 21-30 age group and unreliable Tourists, Post-reform

| Test Statistics[a] | Unreliable | Test Statistics[b] | Unreliable | Test Statistics[c] | Unreliable | Test Statistics[d] | Unreliable | Test Statistics[e] | Unreliable |
|---|---|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 1431.000 | Mann-Whitney U | 1246.500 | Mann-Whitney U | 700.500 | Mann-Whitney U | 388.000 | Mann-Whitney U | 586.500 |
| Wilcoxon W | 2512.000 | Wilcoxon W | 1876.500 | Wilcoxon W | 1135.500 | Wilcoxon W | 619.000 | Wilcoxon W | 757.500 |
| Z | -1.675 | Z | -0.530 | Z | -2.878 | Z | -3.591 | Z | -0.937 |
| Asymp. Sig. (2-tailed) | .094 | Asymp. Sig. (2-tailed) | .596 | Asymp. Sig. (2-tailed) | 0.004 | Asymp. Sig. (2-tailed) | 0.0001 | Asymp. Sig. (2-tailed) | 0.349 |
| a. Grouping Variable: Age - 21-30 & 11-20 | | b. Grouping Variable: Age - 21-30 & 31-40 | | c. Grouping Variable: Age - 21-30 & 41-50 | | d. Grouping Variable: Age - 21-30 & 51-60 | | e. Grouping Variable: Age - 21-30 & 60+ | |

Table I.33 Mann-Whitney U test results for 11-20 age group and unreliable Tourists, Post-reform

| Test Statistics[a] | Unreliable | Test Statistics[b] | Unreliable | Test Statistics[c] | Unreliable | Test Statistics[d] | Unreliable |
|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 738.000 | Mann-Whitney U | 548.500 | Mann-Whitney U | 293.000 | Mann-Whitney U | 403.500 |
| Wilcoxon W | 1819.000 | Wilcoxon W | 983.500 | Wilcoxon W | 524.000 | Wilcoxon W | 1484.500 |
| Z | -0.639 | Z | -1.289 | Z | -2.568 | Z | -0.157 |
| Asymp. Sig. (2-tailed) | .523 | Asymp. Sig. (2-tailed) | 0.197 | Asymp. Sig. (2-tailed) | 0.010 | Asymp. Sig. (2-tailed) | 0.875 |
| a. Grouping Variable: Age - 11-20 & 31-40 | | b. Grouping Variable: Age - 11-20 & 41-50 | | c. Grouping Variable: Age - 11-20 & 51-60 | | d. Grouping Variable: Age - 11-20 & 60+ | |

Table I.34 Mann-Whitney U test results for 31-40 age group and unreliable Tourists, Post-reform

| Test Statistics[a] | Unreliable | Test Statistics[b] | Unreliable | Test Statistics[c] | Unreliable |
|---|---|---|---|---|---|
| Mann-Whitney U | 373.500 | Mann-Whitney U | 214.000 | Mann-Whitney U | 291.500 |
| Wilcoxon W | 808.500 | Wilcoxon W | 445.000 | Wilcoxon W | 462.500 |
| Z | -1.808 | Z | -2.599 | Z | -0.422 |
| Asymp. Sig. (2-tailed) | 0.071 | Asymp. Sig. (2-tailed) | 0.009 | Asymp. Sig. (2-tailed) | 0.659 |
| a. Grouping Variable: Age - 31-40 & 41-50 | | b. Grouping Variable: Age - 31-40 & 51-60 | | c. Grouping Variable: Age - 31-40 & 60+ | |

Appendix J Additional Analysis for Chapter 8

Table J.1 Cross-tabulations Mode use * Occupation, Maltese residents, Pre-Reform

**Mode Use * Occupation**

| Occupation | | Mode Use Car | Bus | Other | Total |
|---|---|---|---|---|---|
| Unemployed | Count | 7 | 10 | 6 | 23 |
| | Expected Count | 11.1 | 6.8 | 5.1 | 23.0 |
| Elementary Occupation | Count | 23 | 7 | 11 | 41 |
| | Expected Count | 19.9 | 12.1 | 9.0 | 41.0 |
| Student | Count | 6 | 30 | 6 | 42 |
| | Expected Count | 20.4 | 12.4 | 9.3 | 42.0 |
| Housekeeper | Count | 57 | 26 | 28 | 111 |
| | Expected Count | 53.8 | 32.7 | 24.5 | 111.0 |
| Retired | Count | 20 | 12 | 15 | 47 |
| | Expected Count | 22.8 | 13.9 | 10.4 | 47.0 |
| Service Worker | Count | 38 | 26 | 15 | 79 |
| | Expected Count | 38.3 | 23.3 | 17.4 | 79.0 |
| Professional | Count | 38 | 4 | 5 | 47 |
| | Expected Count | 22.8 | 13.9 | 10.4 | 47.0 |

Table J.2 Cross-tabulations Mode use * Fare, Maltese residents, Pre-Reform

**Mode Use * Fare**

| Fare | | Mode Use Car | Bus | Other | Total |
|---|---|---|---|---|---|
| Worst | Count | 4 | 1 | 1 | 6 |
| | Expected Count | 2.9 | 1.8 | 1.3 | 6.0 |
| Nearly the Worst | Count | 11 | 4 | 1 | 16 |
| | Expected Count | 7.6 | 4.8 | 3.6 | 16.0 |
| Unsure | Count | 42 | 15 | 14 | 71 |
| | Expected Count | 33.7 | 21.4 | 15.8 | 71.0 |
| Nearly the Best | Count | 68 | 27 | 30 | 125 |
| | Expected Count | 59.4 | 37.7 | 27.9 | 125.0 |
| Best | Count | 56 | 68 | 39 | 163 |
| | Expected Count | 77.4 | 49.2 | 36.4 | 163.0 |

Table J.3 Cross-tabulations Mode use * Occupation, Maltese residents, Post-Reform

**Mode Use * Occupation**

| Occupation | | Mode Use Car | Bus | Other | Total |
|---|---|---|---|---|---|
| Unemployed | Count | 9 | 6 | 1 | 16 |
| | Expected Count | 10.3 | 5.2 | .5 | 16.0 |
| Elementary Occupation | Count | 11 | 5 | 0 | 16 |
| | Expected Count | 10.3 | 5.2 | .5 | 16.0 |
| Student | Count | 12 | 13 | 0 | 25 |
| | Expected Count | 16.1 | 8.2 | .8 | 25.0 |
| Housekeeper | Count | 78 | 49 | 5 | 132 |
| | Expected Count | 84.8 | 43.2 | 4.0 | 132.0 |
| Retired | Count | 56 | 41 | 5 | 102 |
| | Expected Count | 65.5 | 33.4 | 3.1 | 102.0 |
| Service Worker | Count | 49 | 10 | 1 | 60 |
| | Expected Count | 38.5 | 19.6 | 1.8 | 60.0 |
| Professional | Count | 40 | 6 | 0 | 46 |
| | Expected Count | 29.5 | 15.1 | 1.4 | 46.0 |

Table J.4 Cross-tabulations Mode use * District Destination, Maltese residents, Post-Reform

**Mode Use * District Destination**

| District Destination | | Mode Use Car | Bus | Other | Total |
|---|---|---|---|---|---|
| Gozo&Comino | Count | 21 | 4 | 2 | 27 |
| | Expected Count | 17.3 | 8.9 | .8 | 27.0 |
| Western District | Count | 13 | 6 | 2 | 21 |
| | Expected Count | 13.5 | 6.9 | .6 | 21.0 |
| South Eastern District | Count | 21 | 3 | 1 | 25 |
| | Expected Count | 16.0 | 8.2 | .8 | 25.0 |
| Northern District | Count | 38 | 7 | 1 | 46 |
| | Expected Count | 29.5 | 15.1 | 1.4 | 46.0 |
| Southern Harbour District | Count | 85 | 35 | 5 | 125 |
| | Expected Count | 80.2 | 41.0 | 3.8 | 125.0 |
| Northern Harbour District | Count | 76 | 75 | 1 | 152 |
| | Expected Count | 97.5 | 49.9 | 4.6 | 152.0 |

Table J.5 Cross-tabulations Mode use * Reform, Maltese residents, Combined

**Mode Use * Reform**

| Reform | | Mode Use Car | Bus | Other | Total |
|---|---|---|---|---|---|
| Post-Reform | Count | 256 | 130 | 12 | 398 |
| | Expected Count | 224.8 | 123.7 | 49.5 | 398.0 |
| Pre-Reform | Count | 189 | 115 | 86 | 390 |
| | Expected Count | 220.2 | 121.3 | 48.5 | 390.0 |

Table J.6 Cross-tabulations Mode use * Occupation, Maltese residents, Combined

**Mode Use * Occupation**

| Occupation | | Mode Use Car | Bus | Other | Total |
|---|---|---|---|---|---|
| Unemployed | Count | 16 | 16 | 7 | 39 |
| | Expected Count | 22.0 | 12.1 | 4.9 | 39.0 |
| Elementary | Count | 79 | 48 | 16 | 143 |
| Occupation | Expected Count | 80.7 | 44.5 | 17.8 | 143.0 |
| Student | Count | 18 | 43 | 6 | 67 |
| | Expected Count | 37.8 | 20.9 | 8.3 | 67.0 |
| Housekeeper | Count | 68 | 31 | 28 | 127 |
| | Expected Count | 71.6 | 39.5 | 15.8 | 127.0 |
| Retired | Count | 98 | 61 | 20 | 179 |
| | Expected Count | 101.0 | 55.7 | 22.3 | 179.0 |
| Service Worker | Count | 87 | 36 | 16 | 139 |
| | Expected Count | 78.4 | 43.3 | 17.3 | 139.0 |
| Professional | Count | 78 | 10 | 5 | 93 |
| | Expected Count | 52.5 | 29.0 | 11.6 | 93.0 |

Table J.7 Cross-tabulations Mode use * Fare, Maltese residents, Combined

**Mode Use * Fare**

| Fare | | Mode Use Car | Bus | Other | Total |
|---|---|---|---|---|---|
| Worst | Count | 7 | 7 | 1 | 15 |
| | Expected Count | 8.0 | 5.1 | 2.0 | 15.0 |
| Nearly the Worst | Count | 24 | 15 | 1 | 40 |
| | Expected Count | 21.2 | 13.5 | 5.2 | 40.0 |
| Unsure | Count | 71 | 25 | 14 | 110 |
| | Expected Count | 58.4 | 37.2 | 14.4 | 110.0 |
| Nearly the Best | Count | 104 | 45 | 31 | 180 |
| | Expected Count | 95.6 | 60.9 | 23.5 | 180.0 |
| Best | Count | 172 | 149 | 46 | 367 |
| | Expected Count | 194.8 | 124.2 | 47.9 | 367.0 |

Table J. 8 Cross-tabulation Mode use * Accommodation, Tourists, Pre-Reform

Mode Use * Accommodation

| Accommodation | | Mode Use: Private Coaches | Buses | Hired Car | Other | Total |
|---|---|---|---|---|---|---|
| Other | Count | 4 | 29 | 19 | 8 | 60 |
| | Expected Count | 9.2 | 32.9 | 14.3 | 3.6 | 60.0 |
| Host Family | Count | 4 | 26 | 4 | 3 | 37 |
| | Expected Count | 5.7 | 20.3 | 8.8 | 2.2 | 37.0 |
| Guest house | Count | 5 | 32 | 4 | 4 | 45 |
| | Expected Count | 6.9 | 24.7 | 10.7 | 2.7 | 45.0 |
| 5 Star Hotel | Count | 18 | 25 | 24 | 4 | 71 |
| | Expected Count | 10.9 | 39.0 | 16.9 | 4.3 | 71.0 |
| 4 Star Hotel | Count | 21 | 47 | 22 | 0 | 90 |
| | Expected Count | 13.8 | 49.4 | 21.4 | 5.4 | 90.0 |
| 3 Star Hotel | Count | 9 | 60 | 22 | 5 | 96 |
| | Expected Count | 14.7 | 52.7 | 22.9 | 5.8 | 96.0 |

Table J.9 Cross-tabulations Mode use * Age, Tourists, Post-Reform

**Mode Use * Age**

| Age | | Mode Use: Private Coaches | Buses | Hired Car | Other | Total |
|---|---|---|---|---|---|---|
| 11-20 | Count | 4 | 67 | 4 | 5 | 80 |
| | Expected Count | 1.8 | 55.2 | 15.7 | 7.3 | 80.0 |
| 21-30 | Count | 1 | 98 | 15 | 14 | 128 |
| | Expected Count | 2.9 | 88.3 | 25.1 | 11.6 | 128.0 |
| 31-40 | Count | 0 | 42 | 23 | 5 | 70 |
| | Expected Count | 1.6 | 48.3 | 13.8 | 6.3 | 70.0 |
| 51-60 | Count | 4 | 15 | 8 | 6 | 33 |
| | Expected Count | .7 | 22.8 | 6.5 | 3.0 | 33.0 |
| 60+ | Count | 0 | 22 | 6 | 2 | 30 |
| | Expected Count | .7 | 20.7 | 5.9 | 2.7 | 30.0 |
| 41-50 | Count | 0 | 30 | 22 | 4 | 56 |
| | Expected Count | 1.3 | 38.6 | 11.0 | 5.1 | 56.0 |

Table J.10 Cross-tabulations, Mode Use * Fare, Tourists, Post-Reform

**Mode Use * Fare**

| Fare | | Mode Use: Private Coaches | Buses | Hired Car | Other | Total |
|---|---|---|---|---|---|---|
| Worst | Count | 0 | 5 | 1 | 0 | 6 |
| | Expected Count | .2 | 4.8 | .6 | .5 | 6.0 |
| Nearly the Worst | Count | 0 | 11 | 2 | 3 | 16 |
| | Expected Count | .4 | 12.7 | 1.5 | 1.4 | 16.0 |
| Unsure | Count | 0 | 43 | 4 | 7 | 54 |
| | Expected Count | 1.4 | 42.9 | 5.0 | 4.6 | 54.0 |
| Nearly the Best | Count | 2 | 86 | 5 | 14 | 107 |
| | Expected Count | 2.9 | 85.1 | 9.8 | 9.2 | 107.0 |
| Best | Count | 7 | 123 | 19 | 5 | 154 |
| | Expected Count | 4.1 | 122.5 | 14.2 | 13.3 | 154.0 |

Table J.11 Cross-tabulations, Mode Use * Length of Stay, Tourists, Post-Reform

**Mode Use * Length of Stay**

| Length of Stay | | Mode Use: Private Coaches | Buses | Hired Car | Other | Total |
|---|---|---|---|---|---|---|
| 21+ nights | Count | 5 | 46 | 2 | 3 | 56 |
| | Expected Count | 1.3 | 38.6 | 11.1 | 5.1 | 56.0 |
| 15-21 nights | Count | 0 | 21 | 7 | 2 | 30 |
| | Expected Count | .7 | 20.7 | 5.9 | 2.7 | 30.0 |
| 1-3 nights | Count | 0 | 4 | 9 | 2 | 15 |
| | Expected Count | .3 | 10.3 | 3.0 | 1.4 | 15.0 |
| 8-14 nights | Count | 0 | 91 | 26 | 13 | 130 |
| | Expected Count | 2.9 | 89.6 | 25.7 | 11.7 | 130.0 |
| 4-7 nights | Count | 4 | 113 | 35 | 16 | 168 |
| | Expected Count | 3.8 | 115.8 | 33.3 | 15.2 | 168.0 |

Table J.12 Cross-tabulations, Mode Use * Accommodation, Tourists, Post-Reform

**Mode Use * Accommodation**

| Accommodation | | Mode Use: Private Coaches | Buses | Hired Car | Other | Total |
|---|---|---|---|---|---|---|
| Other | Count | 3 | 59 | 23 | 13 | 98 |
| | Expected Count | 2.2 | 67.5 | 19.4 | 8.8 | 98.0 |
| Host Family | Count | 3 | 33 | 1 | 3 | 40 |
| | Expected Count | .9 | 27.6 | 7.9 | 3.6 | 40.0 |
| Guest House | Count | 0 | 8 | 1 | 4 | 13 |
| | Expected Count | .3 | 9.0 | 2.6 | 1.2 | 13.0 |
| 5 Star Hotel | Count | 2 | 16 | 28 | 4 | 50 |
| | Expected Count | 1.1 | 34.5 | 9.9 | 4.5 | 50.0 |
| 4 Star Hotel | Count | 0 | 78 | 18 | 5 | 101 |
| | Expected Count | 2.3 | 69.6 | 20.0 | 9.1 | 101.0 |
| 3 Star Hotel | Count | 1 | 81 | 8 | 7 | 97 |
| | Expected Count | 2.2 | 66.9 | 19.2 | 8.8 | 97.0 |

Table J.13 Cross-tabulations, Mode Use * Reform, Tourists, Combined

**Mode Use * Reform**

| Reform | | Mode Use: Private Coach | Buses | Hired Car | Other | Total |
|---|---|---|---|---|---|---|
| Post | Count | 9 | 275 | 79 | 36 | 399 |
| | Expected Count | 35.0 | 247.2 | 86.9 | 30.0 | 399.0 |
| Pre | Count | 61 | 220 | 95 | 24 | 400 |
| | Expected Count | 35.0 | 247.8 | 87.1 | 30.0 | 400.0 |

Table J.14 Cross-tabulations, Mode Use * Accommodation, Tourists, Combined

**Mode Use * Accommodation**

| | | Mode Use | | | | |
|---|---|---|---|---|---|---|
| Accommodation | | Private Coach | Buses | Hired Car | Other | Total |
| Other | Count | 7 | 88 | 42 | 21 | 158 |
| | Expected Count | 13.9 | 97.8 | 34.5 | 11.9 | 158.0 |
| Host Family | Count | 7 | 59 | 5 | 6 | 77 |
| | Expected Count | 6.8 | 47.7 | 16.8 | 5.8 | 77.0 |
| Guest house | Count | 5 | 40 | 5 | 8 | 58 |
| | Expected Count | 5.1 | 35.9 | 12.6 | 4.4 | 58.0 |
| 5 Star Hotel | Count | 20 | 41 | 52 | 8 | 121 |
| | Expected Count | 10.6 | 74.9 | 26.4 | 9.1 | 121.0 |
| 4 Star Hotel | Count | 21 | 125 | 40 | 5 | 191 |
| | Expected Count | 16.8 | 118.2 | 41.6 | 14.4 | 191.0 |
| 3 Star Hotel | Count | 10 | 141 | 30 | 12 | 193 |
| | Expected Count | 16.9 | 119.5 | 42.1 | 14.5 | 193.0 |

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